



88068102

VOLUME 2

EIS/EIR Appendices



BARREN RIDGE RENEWABLE TRANSMISSION PROJECT



USDA Forest Service

USDI Bureau of Land Management

Los Angeles Department of Water and Power

USFS Application No. USFS-2700-26
BLM Application No. BLM-CACA 48871
SCH No. 2008041038

AUGUST 2011

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APPENDIX A: NOTICE OF PREPARATION, NOTICE OF INTENT, AND FEDERAL REGISTER NOTICE



ANTONIO R. VILLARAIGOSA
Mayor

Commission
NICK PATSAOURAS, *President*
EDITH RAMIREZ, *Vice President*
LEE KANON ALPERT
WALLY KNOX
FORESCEE HOGAN-ROWLES
BARBARA E. MOSCHOS, *Secretary*

H. DAVID NAHAI,
Chief Executive Officer and General Manager

Notice of Preparation

April 7, 2008

To: Agencies, Organizations, and Interested Parties

Subject: Notice of Preparation of a Draft Environmental Impact Report for the Barren Ridge Renewable Transmission Project

The City of Los Angeles Department of Water and Power (LADWP), is proposing the Barren Ridge Renewable Transmission Project to access clean, renewable resources in the Tehachapi Mountain and Mojave Desert areas, and improve reliability and upgrade transmission capacity. Work consists of (1) construction of a 230 kilovolt (kV) transmission line from the existing Barren Ridge Switching Station to Haskell Canyon on double circuit structures; (2) addition of a 230 kV circuit on existing double circuit structures from Haskell Canyon to the Castaic Power Plant; (3) upgrade of the existing Owen Gorge – Rinaldi (OG-RIN) 230 kV Transmission Line with larger capacity conductors between the Barren Ridge Switching Station and Rinaldi Substation; (4) construction of a new electrical switching station within Haskell Canyon near the southern boundary of the Angeles National Forest.

Based on the nature and scope of the proposed project, LADWP has determined that the proposed project is a major federal and state action that may have a significant adverse impact to the environment from construction, operation and maintenance of the project. Both the California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA) are concerned with identifying, analyzing, and disclosing the potential environmental effects of a proposed project prior to its implementation. The Forest Service, BLM, and LADWP will prepare a joint Environmental Impact Statement/Environmental Impact Report (EIS/EIR) for the Barren Ridge Renewable Transmission Project. The Forest Service and BLM will serve as the NEPA co-lead agencies in preparation of the EIS. LADWP is the lead agency for compliance with CEQA and preparation of the EIR.

Agencies: LADWP invites the views of your agency regarding the scope and content of the environmental information to be included in the EIS/EIR, relevant to your agency's statutory responsibilities in connection with the proposed project. Your agency will need to use the EIS/EIR when considering your permit or other discretionary approval your agency may issue for the proposed project.

Water and Power Conservation ...a way of life

111 North Hope Street, Los Angeles, California 90012-2607 Mailing address: Box 51111, Los Angeles 90051-5700
Telephone: (213) 367-4211 Cable address: DEWAPOLA

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Organizations and Interested Parties: LADWP is soliciting comments and concerns from many sources such as interested members of the public and organizations as to the scope of environmental issues to be addressed in the EIS/EIR for this project.

Due to the time limits mandated by State Law, your response must be received by 5:00 p.m. **May 7, 2008**. Please indicate a contact person in your response and submit your response to the following address:

Forest Service/BLM/LADWP
c/o POWER Engineers, Inc
731 E. Ball Road, Suite 100
Anaheim, CA 92805

You are also invited to participate in the project through the following methods:

- Attend one of the public scoping meetings
- Call the toll free Barren Ridge Hotline (877) 440-3592
- Visit the project website www.ladwp.com/barrenridge
- Send an email to BR RTP@powereng.com

Scoping meetings:

All scoping meetings would be announced at least 15 days prior to the event through scoping notices, newspapers, and the LADWP project web site www.ladwp.com/barrenridge/. Seven public scoping meetings are planned at the locations and dates listed below. All meetings will be conducted in an "open house" format to allow participants to attend anytime between 5:30 and 8:30 pm. A brief presentation will be given by the project team at 7 pm followed by a general Q&A session.

April 22, 2008

Santa Clarita Activity
Center
20880 Centre Point
Parkway
Santa Clarita, CA

April 23, 2008

Agua Dulce Women's
Club
33201 Agua Dulce
Canyon
Agua Dulce, CA

April 24, 2008

Castaic Middle School
28900 Hillcrest Parkway
Castaic, CA

April 28, 2008

Hughes-Elizabeth Lakes Union
School
1663 Elizabeth Lake Road
Lake Hughes, CA

April 29, 2008

Frazier Mountain High School
700 Falcon Way
Lebec, CA

April 30, 2008

Hillview School
40525 Peonza Lane
Palmdale, CA

May 1, 2008

California City Middle
School
9736 Redwood Blvd.
California City, CA

In addition to the on going public and agency participation process, formal opportunities for public participation would be provided upon publication of the Draft EIS/EIR.

Project Location:

The Barren Ridge Renewable Transmission Project spans a distance of approximately 75 miles from the Mojave Desert south to the San Fernando Valley. The project is located within northwestern Los Angeles County and southwestern Kern County. The project study area is generally defined by the following limits: the northern boundary is the southern slopes of the Tehachapi Mountains, eastern boundary parallels State Route 14, southern boundary generally parallels the Santa Clara River, and the western boundary parallels Interstate 5. The study area measures approximately 1,280 square miles. Within this study area several routing possibilities have been identified that traverse through the Antelope Valley, across Angeles National Forest, and public lands located in the Mojave Desert. Please refer to the enclosed map for the location of the alternatives currently being considered.

Purpose and Need for Action

The primary purpose and need for the proposed project is to meet Renewable Portfolio Standard (RPS) goals and reduce the environmental impacts associated with greenhouse gases (GHG) and emissions of other air pollutants. Current LADWP RPS goals call for 20% renewable energy by 2010 and 35% by 2020. GHG goals are set for CO₂ emission reductions of 35% below the 1990 levels by 2030.

In order to reach these goals, a second purpose of this action is for additional transmission capacity necessary for the City of Los Angeles to reach and integrate the many proposed renewable energy projects located in the Mojave Desert and Owens Valley areas of Southern California. LADWP is developing two wind projects that would total 270 MW combined in the mountains northeast of Tehachapi. Furthermore, LADWP currently has several interconnection requests for approximately 1200 megawatts (MW) of renewable energy within the same geographical area. These renewable projects are proposed to interconnect to, or deliver power through, the Barren Ridge Switching Station which is being constructed approximately 12 miles north of Mojave on the Owens Gorge-Rinaldi line (OG-RIN) to interconnect LADWP's Pine Tree Wind Farm.

The existing OG-RIN 230 kV transmission line, which has a 400 MW transfer capacity, currently is loaded with 160 MW of electrical load leaving only 240 MW of excess capacity.

Maximizing the capacity of the existing OG-RIN corridor is the second need for the project to not only meet the current interconnection requests, but to utilize future renewable energy sources in this area which are projected by the California Energy Commission at over 4000 MW of wind and over 2000 MW of solar.

The third purpose of the project is to increase system reliability and flexibility. A new switching station would help LADWP meet NERC and WECC reliability requirements while providing greater flexibility in the utilization of both the proposed wind and solar energy within their electrical system.

Lastly, there is a need for LADWP to increase the efficient utilization of the Castaic Power Plant. The power plant is a pump-storage generation facility that would be used to integrate the intermittent renewable energy (wind, solar). This will allow LADWP to utilize its power plants transmission network in a more efficient manner as well as reduce its power system losses.

The Forest Service and BLM need is to respond to the applications from LADWP for a Special Use Authorization (50-year term), Right of Way Grant, and amendments to existing authorizations/grants.

Proposed Action

LADWP is proposing the following components to meet the purpose and need of the project:

- Construct approximately 60 miles of a new 230 kV double circuit structure system from the Barren Ridge Switching Station to Haskell Canyon. This proposed line would cross approximately 13 miles of National Forest System lands and four miles of public lands managed by BLM;
- Install approximately 12 miles of a 230 kV circuit onto existing double circuit transmission line structures from Haskell Canyon to the Castaic Power Plant. This proposed line would cross approximately four miles of National Forest System lands and less than one mile of public lands managed by BLM;
- Reconductor the existing OG-RIN Transmission Line with larger capacity conductors from the Barren Ridge Switching Station to the Rinaldi Substation located in the San Fernando Valley. Approximately 13 miles of National Forest System lands and four miles of public lands managed by BLM would be affected by the reconductoring.
- Construct the new Haskell Switching Station on LADWP-owned property north of Santa Clarita and just south of the Angeles National Forest managed lands.

Possible Alternatives

The Forest Service, BLM, and LADWP have identified preliminary alternatives to the proposed project:

- No-Action Alternative—the proposed project would not be constructed and no expansion or upgrade activities would occur.
- The following routing alternatives for construction of the proposed double circuit 230 kV transmission towers from Barren Ridge Switching Station to Haskell Canyon are being considered:
 - From the Barren Ridge Substation through the Antelope Valley, one alternative route was identified along the LADWP aqueduct.
 - From the Antelope Valley to the proposed Haskell Switching Station, three alternative routes were identified: (1) Corridor along LADWP aqueduct and generally following the Interstate 5 corridor parallel to several existing transmission lines south to the Castaic Power Plant, (2) corridor along SCE's Antelope-Pardee 500 kV Transmission Line through Bouquet

Canyon, or (3) Minimal-National Forest System lands route through Mint Canyon parallel to several existing transmission lines.

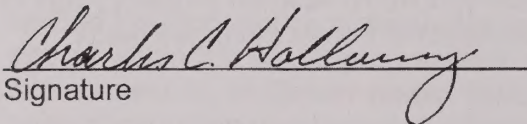
- An alternative that would consider the authorized width on National Forest System lands less than the 200-foot corridor proposed.

Potential Environmental Effects of the Proposed Project

The environmental studies to be conducted as part of the EIS/EIR review process will identify potential impacts associated with the proposed project. However, based on previous projects of similar type, size, and scope, the following are preliminary issues that would likely be evaluated in the draft EIS/EIR:

- visual resources;
- air quality;
- agricultural;
- biological resources;
- cultural and paleontological resources;
- hazards and hazardous materials;
- hydrology and water quality;
- land use, recreation, and planning;
- noise; and
- transportation.

Other potential impacts to be evaluated include forest management related impacts and impacts to the management and use of public lands.



Signature

Charles C. Holloway
Supervisor of Environmental Assessment

BARREN RIDGE RENEWABLE TRANSMISSION PROJECT



Proposed Project Components

- 1** New 230 kV
(Placed on new double-circuit towers)
- 2** New 230 kV Circuit
(Placed on existing towers)
- 3** 230 kV Reconductoring
(Placed on existing towers)
- 4** **NEW SWITCHING STATION**

Preliminary Alternative Routes



TEHACHAPI

PIUTE MOUNTAINS

BARREN RIDGE SWITCHING STATION

EDWARDS AIR FORCE BASE

ROSAMOND LAKE

Kern County
Los Angeles County

Kern County
Los Angeles County

ANTELOPE VALLEY

California Aqueduct

Angeles National Forest

CASTAIC POWERPLANT

CASTAIC LAKE

PIRU LAKE

Los Angeles County
Ventura County

PROPOSED HASKELL SWITCHING STATION

SANTA CLARITA

SANTA SUSANA MOUNTAINS

SIERRA PELONA

LANCASTER

PALMDALE

ACTON

Angeles National Forest

SAN GABRIEL MOUNTAINS

RINALDI SUB
SAN FERNANDO

USDI Bureau of Land Management

USDA Forest Service

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[CA650-08-5101-ER-B294-P]

DEPARTMENT OF AGRICULTURE

Forest Service

Angeles National Forest, CA

DEPARTMENT OF THE INTERIOR

Bureau of Land Management

Ridgecrest Field Office, CA

Barren Ridge Renewable Transmission Project

AGENCY: U.S. Department of Agriculture, Forest Service and U.S. Department of the Interior, Bureau of Land Management.

ACTION: Notice of Intent to prepare a joint Environmental Impact Statement/Report for the Barren Ridge Renewable Transmission Project.

SUMMARY: In accordance with the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA), the U.S. Department of Agriculture (USDA), Forest Service (Forest Service), the U.S. Department of the Interior (DOI), Bureau of Land Management (BLM) and the City of Los Angeles Department of Water and Power (LADWP) will prepare a joint Environmental Impact Statement (EIS) and Environmental Impact Report (EIR) for the proposed Barren Ridge Renewable

Transmission Project. This action is in response to LADWP's application to the Forest Service for a special use authorization and amendments to existing special use authorizations, and application to BLM for a right-of-way grant and amendments to existing right-of-way grants. It has been determined that this project is a major federal action which may have a significant impact upon the environment. Therefore, the appropriate environmental analysis document is an EIS/EIR. The EIS/EIR would describe and analyze potential environmental impacts from the proposed project/action and the range of reasonable alternatives. LADWP proposes the following: (1) construction of a 230 kilovolt (kV) transmission line from the existing Barren Ridge Switching Station to Haskell Canyon on double circuit structures; (2) addition of a 230 kV circuit on existing double circuit structures from Haskell Canyon to the Castaic Power Plant; (3) upgrading of the existing Owens Gorge-Rinaldi (OG-RIN) 230 kV Transmission Line with larger capacity conductors between the Barren Ridge Switching Station and Rinaldi Substation; (4) construction of a new electrical switching station within Haskell Canyon near the southern boundary of the Angeles National Forest.

This notice initiates the public participation and scoping process for the EIS/EIR and also serves as an invitation for other interested agencies, individuals, organizations and Native American Tribes to provide comments on the scope and content of the EIS/EIR.

DATES: Comments concerning the scope of the analysis are requested by **May 7, 2008**. Seven public scoping meetings are planned to provide information about the proposed project/action and to allow people to comment on the proposed project/action. The draft EIS/EIR is expected to be published in July 2009 and the final EIS/EIR is expected in January 2010.

ADDRESSES: To request a copy of the draft or final EIS/EIR, and/or to send written comments, and/or to be added to the project mailing list, please write to the Forest Service/BLM/LADWP c/o POWER Engineers, Inc., 731 E. Ball Rd., Suite 100, Anaheim, CA 92805.

E-mail communications are also welcome; however, please remember to include your name and a return address in the email message. E-mail messages should be sent to BR RTP@powereng.com. Information about the applications and the environmental review process will be posted on the Internet at: <http://ladwp.com/barrenridge>. This site will be used to post all public documents during the environmental review process and to announce upcoming public meetings. See **SUPPLEMENTARY INFORMATION** for dates and addresses of future public meetings.

FOR FURTHER INFORMATION CONTACT: For additional information related to the project please contact the lead agency project managers. For National Forest System lands, contact Marian Kadota, Planning Forester, Adaptive Management Services Enterprise Team Forest Service, 1072 Casitas Pass Road #288, Carpinteria, CA 93013; phone and fax: (805) 220-6388 or email to mkadota@fs.fed.us. For public lands managed by the BLM, contact Linn Gum, Chief, Lands & Minerals, Ridgecrest Field Office, Bureau of Land Management, 300 S. Richmond Road, Ridgecrest, CA 93555; fax: (760) 384-5499 or email to Linn_Gum@ca.blm.gov. For non-federal lands, contact Chuck Holloway, LADWP, 111 North Hope Street, Room 1044, Los Angeles, CA 90012; fax: (213) 367-3582 or email to charles.holloway@ladwp.com. Project information can also be requested by leaving a voice message to the Project Information Hotline at (877) 440-3592.

SUPPLEMENTARY INFORMATION:**Purpose and Need for Action**

The primary purpose and need for the proposed project is to meet the State of California's Renewable Portfolio Standard (RPS) goals and reduce the environmental impacts associated with greenhouse gases (GHG) and emissions of other air pollutants. Current LADWP RPS goals call for 20% renewable energy by 2010 and 35% by 2020. GHG goals are set for CO² emission reductions of 35% below 1990 levels by 2030.

In order to reach these goals, additional transmission capacity is necessary for the City of Los Angeles to reach and integrate the many proposed renewable energy projects located in the Mojave Desert and Owens Valley areas of Southern California. LADWP is developing two wind projects that would total 270 MW combined in the mountains northeast of Tehachapi. Furthermore, LADWP currently has several interconnection requests for approximately 1200 megawatts (MW) of renewable energy within the same geographical area. These renewable projects are proposed to interconnect to, or deliver power through, the Barren Ridge Switching Station which is being constructed approximately 12 miles north of Mojave on the Owens Gorge-Rinaldi line (OG-RIN) to interconnect LADWP's Pine Tree Wind Development Project.

The existing OG-RIN 230 kV transmission line, which has a 400 MW transfer capacity, currently is loaded with 160 MW of electrical load leaving only 240 MW of excess capacity. Maximizing the capacity of the existing OG-RIN corridor is the second need for the project to not only meet the current interconnection requests, but to utilize future renewable energy sources in this area which are projected by the California Energy Commission at over 4000 MW of wind and over 2000 MW of solar.

The third purpose of the project is to increase system reliability and flexibility. A new switching station would help LADWP meet NERC and WECC reliability requirements while providing greater flexibility in the utilization of both the proposed wind and solar energy within their electrical system.

Lastly, there is a need for LADWP to increase the efficient utilization of the Castaic Power Plant. The power plant is a pump-storage generation facility that would be used to integrate the intermittent renewable energy (wind, solar). This will allow LADWP to utilize its power plants transmission network in a more efficient manner as well as reduce its power system losses.

The Forest Service and BLM need is to respond to the applications from LADWP for a Special Use Authorization (50-year term), Right of Way Grant, and amendments to existing authorizations/grants.

Proposed Action

LADWP is proposing the following components to meet the purpose and need of the project:

- Construct approximately 60 miles of a new 230 kV double circuit structure system from the Barren Ridge Switching Station to Haskell Canyon. This proposed line would cross approximately 13 miles of National Forest System lands and four miles of public lands managed by the BLM;
- Install approximately 12 miles of a 230 kV circuit onto existing double circuit transmission line structures from Haskell Canyon to the Castaic Power Plant. This proposed line would cross approximately four miles of National Forest System lands and less than one mile of public lands managed by the BLM;

- Reconnector the existing OG-RIN Transmission Line with larger capacity conductors from the Barren Ridge Switching Station to the Rinaldi Substation located in the San Fernando Valley. Approximately 13 miles of National Forest System lands and four miles of BLM lands would be affected by the reconductoring.
- Construct the new Haskell Switching Station on LADWP-owned property north of Santa Clarita and just south of the Angeles National Forest managed lands.

Possible Alternatives

The Forest Service, BLM, and LADWP have identified preliminary alternatives to the proposed project/action:

- No-Action Alternative—the proposed project would not be constructed and no expansion or upgrade activities would occur.
- The following routing alternatives for construction of the proposed double circuit 230 kV transmission towers from Barren Ridge Switching Station to Haskell

Canyon are being considered:

- From the Barren Ridge Substation through the Antelope Valley, one alternative route was identified along the LADWP aqueduct.
- From the Antelope Valley to the proposed Haskell Switching Station, three alternative routes were identified: (1) Corridor along LADWP aqueduct and generally following the Interstate 5 corridor parallel to several existing transmission lines south to the Castaic Power Plant, (2) corridor along SCE's Antelope-Pardee 500 kV Transmission Line through

Bouquet Canyon, or (3) Minimal-National Forest System lands route through Mint Canyon parallel to several existing transmission lines.

- An alternative that would consider the authorized width on National Forest System lands less than the 200-foot corridor proposed.

Lead and Cooperating Agencies

The Forest Service, BLM, and LADWP are joint lead agencies in accordance with 40 CFR 1501.5(b), and are responsible for the preparation of the EIS/EIR. The Forest Service and BLM will serve as co-lead agencies under NEPA for preparation of the EIS. The LADWP will serve as the lead agency under CEQA for preparation of the EIR. Scoping will determine if additional cooperating agencies are needed.

Responsible Official

The Forest Service responsible official for the preparation of the EIS/EIR is Jody Noiron, Forest Supervisor, Angeles National Forest, 701 N. Santa Anita Avenue, Arcadia, CA 91006. The BLM responsible official for the preparation of the EIS/EIR is Hector Villalobos, Field Office Manager, Ridgecrest Field Office, Bureau of Land Management, 300 S. Richmond Road, Ridgecrest, CA 93555

Nature of Decision To Be Made

The Forest Supervisor will decide whether or not to authorize a 50-year term Special Use Authorization for an approximate 13 mile, 200 foot wide right-of-way for construction, operation and maintenance of a 230 kV transmission line parallel to the existing OG-RIN transmission line route (or alternative route) constructed on new double circuit structures and amend two existing Special Use Authorizations for: 1) the conductoring of the empty position of one of the existing Castaic Power Plant 230 kV

double-circuit transmission line towers from the Castaic Power Plant to Haskell Canyon (approximately 4 miles across National Forest System lands), and 2) the replacement of conductors on the OG-RIN 230 kV transmission line (approximately 13 miles across National Forest System lands). The authorizations could include ancillary improvements on National Forest System lands needed to maintain the transmission system (i.e. double circuit towers, roads, communication equipment). The Forest Supervisor will only make a decision regarding the proposed project on National Forest System lands.

The BLM Ridgecrest Field Office Manager would have several authorizations to be made as part of the project. The BLM Field Office Manager would decide whether to authorize a Right-Of-Way Grant for an approximate 4 mile, 200-foot wide right-of-way for construction, operation and maintenance of a 230 kV transmission line parallel to the existing OG-RIN transmission line route (or alternative route) constructed on new double circuit structures. Additional authorizations to be made by the Field Office Manager include revising existing Right-Of-Way Grants for: 1) the conducting of the empty position of one of the existing Castaic Power Plant 230 kV double-circuit transmission line towers from the Castaic Power Plant to Haskell Canyon (less than 1 mile across public lands managed by BLM), and 2) the replacement of conductors on the OG-RIN 230 kV transmission line (approximately 4 miles across public lands managed by BLM). The authorizations would include ancillary improvements on public lands needed to maintain the transmission system (i.e. double circuit towers, roads, communication equipment).

Scoping Process

The lead agencies will be seeking information, issues, comments and assistance from Federal, State and local agencies, Native American tribes, and other individuals and organizations that may be interested in or affected by the proposed project. This input will be used in preparation of the Draft EIS/EIR.

Seven scoping meetings are proposed to provide information about the proposed project to the public and to allow people to comment on the proposed project. The scoping meetings will be held on the following dates, times, and locations:

- 1. April 22, 2008, Open House 5:30 - 8:30 pm, Presentation at 7:00 pm**
Santa Clarita Activity Center, 20880 Centre Point Parkway, Santa Clarita, CA
- 2. April 23, 2008, Open House 5:30 - 8:30 pm, Presentation at 7:00 pm**
Agua Dulce Women's Club, 33201 Agua Dulce Canyon, Agua Dulce, CA
- 3. April 24, 2008, Open House 5:30 - 8:30 pm, Presentation at 7:00 pm**
Castaic Middle School, 28900 Hillcrest Parkway, Castaic, CA
- 4. April 28, 2008, Open House 5:30 - 8:30 pm, Presentation at 7:00 pm**
Hughes-Elizabeth Lakes Union School, 16633 Elizabeth Lake Road, Lake Hughes, CA
- 5. April 29, 2008, Open House 5:30 - 8:30 pm, Presentation at 7:00 pm**
Frazier Mountain High School, 700 Falcon Way, Lebec, CA
- 6. April 30, 2008, Open House 5:30 - 8:30 pm, Presentation at 7:00 pm**
Hillview School, 40525 Peonza Lane, Palmdale, CA
- 7. May 1, 2008, Open House 5:30 - 8:30 pm, Presentation at 7:00 pm**
California City Middle School, 9736 Redwood Blvd, California City, CA 93505

All public meetings will be announced at least 15 days prior to the event through the local newspapers, the FS web site <http://www.fs.fed.us/r5/angeles/projects/> and the BLM web site <http://www.ca.blm.gov/ridgecrest>. In addition to the ongoing public participation process, formal opportunities for public participation would be provided upon publication of the Draft EIS/EIR.

Preliminary Issues

The environmental studies to be conducted as part of the EIS/EIR review process will identify potential impacts associated with the proposed project. However, based on previous projects of similar type, size, and scope, the following are preliminary issues that would likely be evaluated in the draft EIS/EIR: visual resources; air quality; agriculture; biological resources; cultural and paleontological resources; hazards and hazardous materials; hydrology and water quality; land use, recreation, and planning; noise; and transportation. Other potential impacts to be evaluated include forest management related impacts and impacts to the management and use of public lands; and electric and magnetic fields and health effects.

Permits or Licenses Required

A 50-year term Special Use Authorization by the Forest Supervisor of the Angeles National Forest and Right-Of-Way Grant from the BLM Ridgecrest Field Office Manager will authorize LADWP for the construction, maintenance, and use of the new 230 kV transmission line on double circuit towers. Existing Special Use Permits and Right-Of-Way Grants would be amended for authorization of the replacement, maintenance, and use of electrical conductors associated with the OG-RIN 230 kV

transmission line, and for the construction, maintenance and use of a second electrical circuit on existing double circuit structures from the Castaic Power Plant.

Additional permits may be required by LADWP to construct the project. These could include: Section 404 Permit by the U.S. Army Corps of Engineers, Federal Aviation Administration Permit for Construction or Alteration, National Pollutant Discharge Elimination System General Construction Permit issued by California's Regional Water Quality Control Board, Streambed Alteration Agreement issued by the California Department of Fish and Game, Permit to Construct issued by the South Coast Air Quality Management District, Encroachment Permit issued by California Department of Transportation, and Encroachment Permits issued by Kern and Los Angeles Counties.

Comment requested

This notice of intent initiates the scoping process which guides the development of the EIS/EIR. The Lead Agencies are seeking public and agency comment on the proposed project/action to identify major issues to be analyzed in depth and assistance in identifying potential alternatives to be evaluated. Comments received on this notice, including the names and addresses of those who comment, will be considered as part of the public record on this proposed project/action, and will be available for public inspection. Comments submitted anonymously will be accepted and considered; however, those who submit anonymous comments will not have standing to appeal the subsequent decision under 36 CFR Part 215. Additionally, pursuant to 7 CFR 1.27(d), any person may request the agency to withhold a submission from the public record by showing how the Freedom of Information Act (FOIA) permits such confidentiality. Persons requesting such confidentiality should be aware that, under the FOIA,

confidentiality may be granted in only very limited circumstances, such as to protect trade secrets. The Lead Agencies will inform the requester of the decision regarding the request for confidentiality. Where the request is denied, the agency will return the submission and notify the requester that the comments may be resubmitted, without names and addresses, within a specified number of days.

Early Notice of Importance of Public Participation in Subsequent Environmental Review

A draft EIS/EIR will be prepared for comment. The comment period on the Draft EIS/EIR will be 45 days from the date the Environmental Protection Agency publishes the notice of availability in the Federal Register.

The Lead Agencies believe, at this early stage, it is important to give reviewers notice of several court rulings related to public participation in the environmental review process. First, reviewers of draft EIS/EIR must structure their participation in the environmental review of the proposal so that it is meaningful and alerts an agency to the reviewer's position and contentions. Vermont Yankee Nuclear Power Corp. v. NRDC, 435 U.S. 519, 553 (1978). Also, environmental objections that could be raised at the draft EIS/EIR stage but that are not raised until after completion of the final EIS/EIR may be waived or dismissed by the courts. City of Angoon v. Hodel, 803 F.2d 1016, 1022 (9th Cir. 1986) and Wisconsin Heritages, Inc v. Harris, 490 F. Supp. 1334, 1338 (E.D. Wis. 1980). Because of these court rulings, it is very important that those interested in this proposed action participate by the close of the 45 day comment period so that substantive comments and objections are made available to the Lead Agencies at a time when they can meaningfully consider them and respond to them in the final EIS/EIR.

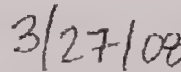
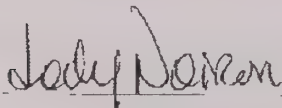
Original

To assist the Lead Agencies in identifying and considering issues and concerns on the proposed action, comments on the draft EIS/IEIR should be as specific as possible. It is also helpful if comments refer to specific pages or chapters of the draft EIS/IEIR.

Comments may also address the adequacy of the draft EIS/IEIR or the merits of the alternatives formulated and discussed in the statement. Reviewers may wish to refer to the Council on Environmental Quality Regulations for implementing the procedural provisions of the National Environmental Policy Act at 40 CFR 1503.3 in addressing these points.

Comments received, including the names and addresses of those who comment, will be considered part of the public record on this proposal and will be available for public inspection.

(Authority: 40 CFR 1501.7 and 1508.22; Forest Service Handbook 1909.15, Section 21; BLM Handbook H-1790-1, Section V)

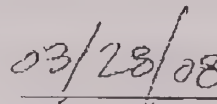



Jody Noiron

(Date)

Angeles Forest Supervisor

U.S. Department of Agriculture, Forest Service



Hector Villalobos

(Date)

Field Office Manager

U.S. Department of the Interior, Bureau of Land Management

plants, marking containers used for the importation, exportation, and reexportation of the plants, and creating and maintaining records of importation, exportation, and reexportation.

APHIS also administers regulations at 7 CFR part 356, "Forfeiture Procedures," which sets out procedures for the forfeiture of plants or other property by entities in violation of the Endangered Species Act or the Lacey Act Amendments of 1981 (16 U.S.C. 3371 *et seq.*). Entities whose property is subject to forfeiture may file with APHIS a waiver of forfeiture procedures, a claim of ownership or interest in the seized property and a bond, a request for bonded release of property, a petition for remission or mitigation of forfeiture, or a request for release of property.

The information provided by these information collection activities is critical to APHIS' ability to carry out its responsibilities under the Endangered Species Act and the Lacey Act. These responsibilities include monitoring importation, exportation, and reexportation activities involving endangered species of plants, as well as the investigation of possible violations and the forfeiture of plants or other property.

We are asking the Office of Management and Budget (OMB) to approve our use of these information collection activities for an additional 3 years.

The purpose of this notice is to solicit comments from the public (as well as affected agencies) concerning our information collection. These comments will help us:

- (1) Evaluate whether the collection of information is necessary for the proper performance of the functions of the Agency, including whether the information will have practical utility;
- (2) Evaluate the accuracy of our estimate of the burden of the collection of information, including the validity of the methodology and assumptions used;
- (3) Enhance the quality, utility, and clarity of the information to be collected; and
- (4) Minimize the burden of the collection of information on those who are to respond, through use, as appropriate, of automated, electronic, mechanical, and other collection technologies; e.g., permitting electronic submission of responses.

Estimate of burden: The public reporting burden for this collection of information is estimated to average 0.1039962 hours per response.

Respondents: U.S. importers, exporters, and reexporters of endangered species of terrestrial plants.

Estimated annual number of respondents: 16,584.

Estimated annual number of responses per respondent: 4.9476.

Estimated annual number of responses: 82,051.

Estimated total annual burden on respondents: 8,533 hours. (Due to averaging, the total annual burden hours may not equal the product of the annual number of responses multiplied by the reporting burden per response.)

All responses to this notice will be summarized and included in the request for OMB approval. All comments will also become a matter of public record.

Done in Washington, DC, this 1st day of April 2008.

Kevin Shea,

Acting Administrator, Animal and Plant Health Inspection Service.

[FR Doc. E8-7193 Filed 4-4-08; 8:45 am]

BILLING CODE 3410-34-P

DEPARTMENT OF AGRICULTURE

Forest Service

DEPARTMENT OF THE INTERIOR

Bureau of Land Management

[CA650-08-5101-ER-B294-P]

Angeles National Forest, CA; Ridgecrest Field Office, CA; Barren Ridge Renewable Transmission Project

AGENCY: U.S. Department of Agriculture, Forest Service and U.S. Department of the Interior, Bureau of Land Management.

ACTION: Notice of Intent to prepare a joint Environmental Impact Statement/Report for the Barren Ridge Renewable Transmission Project.

SUMMARY: In accordance with the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA), the U.S. Department of Agriculture (USDA), Forest Service (Forest Service), the U.S. Department of the Interior (DOI), Bureau of Land Management (BLM) and the City of Los Angeles Department of Water and Power (LADWP) will prepare a joint Environmental Impact Statement (EIS) and Environmental Impact Report (EIR) for the proposed Barren Ridge Renewable Transmission Project. This action is in response to LADWP's application to the Forest Service for a special use authorization and amendments to existing special use authorizations, and application to BLM for a right-of-way grant and amendments to existing right-of-way

grants. It has been determined that this project is a major federal action which may have a significant impact upon the environment. Therefore, the appropriate environmental analysis document is an EIS/EIR. The EIS/EIR would describe and analyze potential environmental impacts from the proposed project/action and the range of reasonable alternatives. LADWP proposes the following: (1) Construction of a 230 kilovolt (kV) transmission line from the existing Barren Ridge Switching Station to Haskell Canyon on double circuit structures; (2) addition of a 230 kV circuit on existing double circuit structures from Haskell Canyon to the Castaic Power Plant; (3) upgrading of the existing Owens Gorge-Rinaldi (OG-RIN) 230 kV Transmission Line with larger capacity conductors between the Barren Ridge Switching Station and Rinaldi Substation; (4) construction of a new electrical switching station within Haskell Canyon near the southern boundary of the Angeles National Forest.

This notice initiates the public participation and scoping process for the EIS/EIR and also serves as an invitation for other interested agencies, individuals, organizations and Native American Tribes to provide comments on the scope and content of the EIS/EIR.

DATES: Comments concerning the scope of the analysis are requested by May 7, 2008. Seven public scoping meetings are planned to provide information about the proposed project/action and to allow people to comment on the proposed project/action. The draft EIS/EIR is expected to be published in July 2009 and the final EIS/EIR is expected in January 2010.

ADDRESSES: To request a copy of the draft or final EIS/EIR, and/or to send written comments, and/or to be added to the project mailing list, please write to the Forest Service/BLM/LADWP c/o POWER Engineers, Inc., 731 E. Ball Rd., Suite 100, Anaheim, CA 92805.

E-mail communications are also welcome; however, please remember to include your name and a return address in the email message. E-mail messages should be sent to BRRTTP@powereng.com. Information about the applications and the environmental review process will be posted on the Internet at: <http://ladwp.com/barrenridge>. This site will be used to post all public documents during the environmental review process and to announce upcoming public meetings. See **SUPPLEMENTARY INFORMATION** for dates and addresses of future public meetings.

FOR FURTHER INFORMATION CONTACT: For additional information related to the project please contact the lead agency project managers. For National Forest System lands, contact Marian Kadota, Planning Forester, Adaptive Management Services Enterprise Team Forest Service, 1072 Casitas Pass Road #288, Carpinteria, CA 93013; phone and fax: (805) 220-6388 or e-mail to mkadota@fs.fed.us. For public lands managed by the BLM, contact Linn Gum, Chief, Lands & Minerals, Ridgecrest Field Office, Bureau of Land Management, 300 S. Richmond Road, Ridgecrest, CA 93555; fax: (760) 384-5499 or e-mail to Linn_Gum@ca.blm.gov. For non-federal lands, contact Chuck Holloway, LADWP, 111 North Hope Street, Room 1044, Los Angeles, CA 90012; fax: (213) 367-3582 or e-mail to charles.holloway@ladwp.com. Project information can also be requested by leaving a voice message to the Project Information Hotline at (877) 440-3592.

SUPPLEMENTARY INFORMATION:

Purpose and Need for Action

The primary purpose and need for the proposed project is to meet the State of California's Renewable Portfolio Standard (RPS) goals and reduce the environmental impacts associated with greenhouse gases (GHG) and emissions of other air pollutants. Current LADWP RPS goals call for 20% renewable energy by 2010 and 35% by 2020. GHG goals are set for CO₂ emission reductions of 35% below 1990 levels by 2030.

In order to reach these goals, additional transmission capacity is necessary for the City of Los Angeles to reach and integrate the many proposed renewable energy projects located in the Mojave Desert and Owens Valley areas of Southern California. LADWP is developing two wind projects that would total 270 MW combined in the mountains northeast of Tehachapi. Furthermore, LADWP currently has several interconnection requests for approximately 1200 megawatts (MW) of renewable energy within the same geographical area. These renewable projects are proposed to interconnect to, or deliver power through, the Barren Ridge Switching Station which is being constructed approximately 12 miles north of Mojave on the Owens Gorge-Rinaldi line (OG-RIN) to interconnect LADWP's Pine Tree Wind Development Project.

The existing OG-RIN 230 kV transmission line, which has a 400 MW transfer capacity, currently is loaded with 160 MW of electrical load leaving only 240 MW of excess capacity.

Maximizing the capacity of the existing OG-RIN corridor is the second need for the project to not only meet the current interconnection requests, but to utilize future renewable energy sources in this area which are projected by the California Energy Commission at over 4000 MW of wind and over 2000 MW of solar.

The third purpose of the project is to increase system reliability and flexibility. A new switching station would help LADWP meet NERC and WECC reliability requirements while providing greater flexibility in the utilization of both the proposed wind and solar energy within their electrical system.

Last, there is a need for LADWP to increase the efficient utilization of the Castaic Power Plant. The power plant is a pump-storage generation facility that would be used to integrate the intermittent renewable energy (wind, solar). This will allow LADWP to utilize its power plants transmission network in a more efficient manner as well as reduce its power system losses.

The Forest Service and BLM need is to respond to the applications from LADWP for a Special Use Authorization (50-year term), Right of Way Grant, and amendments to existing authorizations/grants.

Proposed Action

LADWP is proposing the following components to meet the purpose and need of the project:

- Construct approximately 60 miles of a new 230 kV double circuit structure system from the Barren Ridge Switching Station to Haskell Canyon. This proposed line would cross approximately 13 miles of National Forest System lands and four miles of public lands managed by the BLM;

- Install approximately 12 miles of a 230 kV circuit onto existing double circuit transmission line structures from Haskell Canyon to the Castaic Power Plant. This proposed line would cross approximately four miles of National Forest System lands and less than one mile of public lands managed by the BLM;

- Reconductor the existing OG-RIN Transmission Line with larger capacity conductors from the Barren Ridge Switching Station to the Rinaldi Substation located in the San Fernando Valley. Approximately 13 miles of National Forest System lands and four miles of BLM lands would be affected by the reconductoring.

- Construct the new Haskell Switching Station on LADWP-owned property north of Santa Clarita and just

south of the Angeles National Forest managed lands.

Possible Alternatives

The Forest Service, BLM, and LADWP have identified preliminary alternatives to the proposed project/action:

- No-Action Alternative—the proposed project would not be constructed and no expansion or upgrade activities would occur.

- The following routing alternatives for construction of the proposed double circuit 230 kV transmission towers from Barren Ridge Switching Station to Haskell Canyon are being considered:

- From the Barren Ridge Substation through the Antelope Valley, one alternative route was identified along the LADWP aqueduct.

- From the Antelope Valley to the proposed Haskell Switching Station, three alternative routes were identified: (1) Corridor along LADWP aqueduct and generally following the Interstate 5 corridor parallel to several existing transmission lines south to the Castaic Power Plant, (2) corridor along SCE's Antelope-Pardee 500 kV Transmission Line through Bouquet Canyon, or (3) Minimal-National Forest System lands route through Mint Canyon parallel to several existing transmission lines.

- An alternative that would consider the authorized width on National Forest System lands less than the 200-foot corridor proposed.

Lead and Cooperating Agencies

The Forest Service, BLM, and LADWP are joint lead agencies in accordance with 40 CFR 1501.5(b), and are responsible for the preparation of the EIS/EIR. The Forest Service and BLM will serve as co-lead agencies under NEPA for preparation of the EIS. The LADWP will serve as the lead agency under CEQA for preparation of the EIR. Scoping will determine if additional cooperating agencies are needed.

Responsible Official

The Forest Service responsible official for the preparation of the EIS/EIR is Jody Noiron, Forest Supervisor, Angeles National Forest, 701 N. Santa Anita Avenue, Arcadia, CA 91006. The BLM responsible official for the preparation of the EIS/EIR is Hector Villalobos, Field Office Manager, Ridgecrest Field Office, Bureau of Land Management, 300 S. Richmond Road, Ridgecrest, CA 93555.

Nature of Decision To Be Made

The Forest Supervisor will decide whether or not to authorize a 50-year term Special Use Authorization for an approximate 13-mile, 200-foot-wide

right-of-way for construction, operation and maintenance of a 230 kV transmission line parallel to the existing OG-RIN transmission line route (or alternative route) constructed on new double circuit structures and amend two existing Special Use Authorizations for: (1) The conductor of the empty position of one of the existing Castaic Power Plant 230 kV double-circuit transmission line towers from the Castaic Power Plant to Haskell Canyon (approximately 4 miles across National Forest System lands), and (2) the replacement of conductors on the OG-RIN 230 kV transmission line (approximately 13 miles across National Forest System lands). The authorizations could include ancillary improvements on National Forest System lands needed to maintain the transmission system (i.e. double circuit towers, roads, communication equipment). The Forest Supervisor will only make a decision regarding the proposed project on National Forest System lands.

The BLM Ridgecrest Field Office Manager would have several authorizations to be made as part of the project. The BLM Field Office Manager would decide whether to authorize a Right-Of-Way Grant for an approximate 4-mile, 200-foot-wide right-of-way for construction, operation and maintenance of a 230 kV transmission line parallel to the existing OG-RIN transmission line route (or alternative route) constructed on new double circuit structures. Additional authorizations to be made by the Field Office Manager include revising existing Right-Of-Way Grants for: (1) The conductor of the empty position of one of the existing Castaic Power Plant 230 kV double-circuit transmission line towers from the Castaic Power Plant to Haskell Canyon (less than 1 mile across public lands managed by BLM), and (2) the replacement of conductors on the OG-RIN 230 kV transmission line (approximately 4 miles across public lands managed by BLM). The authorizations would include ancillary improvements on public lands needed to maintain the transmission system (i.e. double circuit towers, roads, communication equipment).

Scoping Process

The lead agencies will be seeking information, issues, comments and assistance from Federal, State and local agencies, Native American tribes, and other individuals and organizations that may be interested in or affected by the proposed project. This input will be used in preparation of the Draft EIS/EIR.

Seven scoping meetings are proposed to provide information about the proposed project to the public and to allow people to comment on the proposed project. The scoping meetings will be held on the following dates, times, and locations:

1. April 22, 2008, Open House 5:30–8:30 p.m., Presentation at 7 p.m., Santa Clarita Activity Center, 20880 Centre Point Parkway, Santa Clarita, CA.
2. April 23, 2008, Open House 5:30–8:30 p.m., Presentation at 7 p.m., Agua Dulce Women's Club, 33201 Agua Dulce Canyon, Agua Dulce, CA.
3. April 24, 2008, Open House 5:30–8:30 p.m., Presentation at 7 p.m., Castaic Middle School, 28900 Hillcrest Parkway, Castaic, CA.
4. April 28, 2008, Open House 5:30–8:30 p.m., Presentation at 7 p.m., Hughes-Elizabeth Lakes Union School, 16633 Elizabeth Lake Road, Lake Hughes, CA.
5. April 29, 2008, Open House 5:30–8:30 p.m., Presentation at 7 p.m., Frazier Mountain High School, 700 Falcon Way, Lebec, CA.
6. April 30, 2008, Open House 5:30–8:30 p.m., Presentation at 7 p.m., Hillview School, 40525 Peonza Lane, Palmdale, CA.
7. May 1, 2008, Open House 5:30–8:30 p.m., Presentation at 7 p.m., California City Middle School, 9736 Redwood Blvd., California City, CA 93505.

All public meetings will be announced at least 15 days prior to the event through the local newspapers, the FS Web site <http://www.fs.fed.us/r5/angeles/projects/> and the BLM Web site <http://www.ca.blm.gov/ridgecrest>. In addition to the ongoing public participation process, formal opportunities for public participation would be provided upon publication of the Draft EIS/EIR.

Preliminary Issues

The environmental studies to be conducted as part of the EIS/EIR review process will identify potential impacts associated with the proposed project. However, based on previous projects of similar type, size, and scope, the following are preliminary issues that would likely be evaluated in the draft EIS/EIR: Visual resources; air quality; agriculture; biological resources; cultural and paleontological resources; hazards and hazardous materials; hydrology and water quality; land use, recreation, and planning; noise; and transportation. Other potential impacts to be evaluated include forest management related impacts and impacts to the management and use of public lands; and electric and magnetic fields and health effects.

Permits or Licenses Required

A 50-year term Special Use Authorization by the Forest Supervisor of the Angeles National Forest and Right-Of-Way Grant from the BLM Ridgecrest Field Office Manager will authorize LADWP for the construction, maintenance, and use of the new 230 kV transmission line on double circuit towers. Existing Special Use Permits and Right-Of-Way Grants would be amended for authorization of the replacement, maintenance, and use of electrical conductors associated with the OG-RIN 230 kV transmission line, and for the construction, maintenance and use of a second electrical circuit on existing double circuit structures from the Castaic Power Plant.

Additional permits may be required by LADWP to construct the project. These could include: Section 404 Permit by the U.S. Army Corps of Engineers, Federal Aviation Administration Permit for Construction or Alteration, National Pollutant Discharge Elimination System General Construction Permit issued by California's Regional Water Quality Control Board, Streambed Alteration Agreement issued by the California Department of Fish and Game, Permit to Construct issued by the South Coast Air Quality Management District, Encroachment Permit issued by California Department of Transportation, and Encroachment Permits issued by Kern and Los Angeles Counties.

Comment Requested

This notice of intent initiates the scoping process which guides the development of the EIS/EIR. The Lead Agencies are seeking public and agency comment on the proposed project/action to identify major issues to be analyzed in depth and assistance in identifying potential alternatives to be evaluated. Comments received on this notice, including the names and addresses of those who comment, will be considered as part of the public record on this proposed project/action, and will be available for public inspection. Comments submitted anonymously will be accepted and considered; however, those who submit anonymous comments will not have standing to appeal the subsequent decision under 36 CFR part 215. Additionally, pursuant to 7 CFR 1.27(d), any person may request the agency to withhold a submission from the public record by showing how the Freedom of Information Act (FOIA) permits such confidentiality. Persons requesting such confidentiality should be aware that, under the FOIA, confidentiality may be

granted in only very limited circumstances, such as to protect trade secrets. The Lead Agencies will inform the requester of the decision regarding the request for confidentiality. Where the request is denied, the agency will return the submission and notify the requester that the comments may be resubmitted, without names and addresses, within a specified number of days.

Early Notice of Importance of Public Participation in Subsequent Environmental Review

A draft EIS/EIR will be prepared for comment. The comment period on the Draft EIS/EIR will be 45 days from the date the Environmental Protection Agency publishes the notice of availability in the **Federal Register**.

The Lead Agencies believe, at this early stage, it is important to give reviewers notice of several court rulings related to public participation in the environmental review process. First, reviewers of draft EIS/EIR must structure their participation in the environmental review of the proposal so that it is meaningful and alerts an agency to the reviewer's position and contentions. *Vermont Yankee Nuclear Power Corp. v. NRDC*, 435 U.S. 519, 553 (1978). Also, environmental objections that could be raised at the draft EIS/EIR stage but that are not raised until after completion of the final EIS/EIR may be waived or dismissed by the courts. *City of Angoon v. Hodel*, 803 F.2.d 1016, 1022 (9th Cir. 1986) and *Wisconsin Heritages, Inc v. Harris*, 490 F. Supp. 1334, 1338 (E.D. Wis. 1980). Because of these court rulings, it is very important that those interested in this proposed action participate by the close of the 45 day comment period so that substantive comments and objections are made available to the Lead Agencies at a time when they can meaningfully consider them and respond to them in the final EIS/EIR.

To assist the Lead Agencies in identifying and considering issues and concerns on the proposed action, comments on the draft EIS/EIR should be as specific as possible. It is also helpful if comments refer to specific pages or chapters of the draft EIS/EIR. Comments may also address the adequacy of the draft EIS/EIR or the merits of the alternatives formulated and discussed in the statement. Reviewers may wish to refer to the Council on Environmental Quality Regulations for implementing the procedural provisions of the National Environmental Policy Act at 40 CFR 1503.3 in addressing these points.

Comments received, including the names and addresses of those who comment, will be considered part of the public record on this proposal and will be available for public inspection.

Authority: 40 CFR 1501.7 and 1508.22; Forest Service Handbook 1909.15, Section 21; BLM Handbook H-1790-1, Section V.

Dated: March 27, 2008.

Jody Noiron,

Angeles Forest Supervisor, U.S. Department of Agriculture, Forest Service.

Dated: March 28, 2008.

Hector Villalobos,

Field Office Manager, U.S. Department of the Interior, Bureau of Land Management.

[FR Doc. E8-6897 Filed 4-2-08; 8:45 am]

BILLING CODE 3410-11-P

DEPARTMENT OF AGRICULTURE

Forest Service

Proposed CERCLA Settlement Agreement; Silver Bow County, MT

AGENCY: Forest Service, USDA.

ACTION: Notice; request for public comment.

SUMMARY: In accordance with Section 122(i) of the Comprehensive Environmental Response, Compensation, and Liability Act, as amended ("CERCLA"), 42 U.S.C. 9622(i), notice is hereby given of an administrative settlement with the owners of an 18-acre parcel (the Settling Parties) within the Beal Mine site in Silver Bow County, Montana. The settlement requires the Settling Parties to convey the parcel to the United States. The settlement includes a covenant not to sue the Settling Parties pursuant Section 107(a) of CERCLA, 42 U.S.C. 9607(a), with regard to the Beal Mine Site. For thirty (30) days following the date of publication of this notice, the United States will receive written comments relating to the settlement. The United States will consider all comments received and may modify or withdraw its consent to the settlement if comments received disclose facts or considerations which indicate that the settlement is inappropriate, improper, or inadequate.

DATES: Comments must be submitted on or before May 7, 2008.

ADDRESSES: The proposed settlement is available for public inspection at the Butte Ranger District/Supervisor's Office Annex of the Beaverhead-Deerlodge National Forest, 1820 Meadowlark Lane, Butte, MT 59701. A copy of the proposed settlement may be obtained from Gary E. Howard at the

Butte Ranger District/Supervisor's Office Annex at (406) 494-0228 or from Kirk Minckler with USDA's Office of the General Counsel, (303) 275-5549. Comments should reference the Revelation Lode Parcel, Silver Bow County, Montana, and should be addressed to Mr. Howard at the Butte Ranger District/Supervisor's Office Annex. The United States' response to any comments received will be available for public inspection at the Butte Ranger District/Supervisor's Office Annex.

FOR FURTHER INFORMATION CONTACT: For additional information contact Gary E. Howard, Butte Ranger District/Supervisor's Office Annex, Beaverhead Deerlodge National Forest, 1820 Meadowlark Lane, Butte, MT 59701, phone (406) 494-0228 or Kirk Minckler, USDA Office of the General Counsel, 740 Simms Street, Room 309, Golden, CO 80401, phone (303) 275-5549.

Dated: March 21, 2008.

Thomas L. Tidwell,

Regional Forester, USDA Forest Service, Northern Region.

[FR Doc. E8-6853 Filed 4-4-08; 8:45 am]

BILLING CODE 3410-11-M

DEPARTMENT OF COMMERCE

Submission for OMB Review; Comment Request

The Department of Commerce will submit to the Office of Management and Budget (OMB) for clearance the following proposal for collection of information under the provisions of the Paperwork Reduction Act (44 U.S.C. chapter 35).

Agency: U.S. Census Bureau.

Title: Special Census Program.

Form Number(s): SC-1, SC-1 SUPP, SC-1 (Phone/WYC), SC-2, SC-116, SC-351, SC-920, SC-921(HU), SC-921(SP).

OMB Control Number: 0607-0368.

Type of Request: Extension of a currently approved collection.

Burden Hours: 19,143.

Number of Respondents: 293,687.

Average Hours per Response: 4 minutes.

Needs and Uses: Governmental units requiring current population statistics between decennial censuses request that the Census Bureau conduct special censuses. Many states distribute funds based on current population statistics. In addition, special census data are used by the local jurisdictions to plan new schools, transportation systems, housing programs, and water treatment facilities.

The Special Census Program operates as a generic OMB clearance, including a library of forms and the operational

APPENDIX B: ALTERNATIVES DEVELOPMENT REPORT

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December 2010

BARREN RIDGE RENEWABLE TRANSMISSION PROJECT

Alternatives Development Report

PROJECT NUMBER:
118418

PROJECT CONTACT:
MIKE STRAND
EMAIL:
MSTRAND@POWERENG.COM
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Barren Ridge Renewable Transmission Project Alternatives Development Report

PREPARED FOR:

LOS ANGELES DEPARTMENT OF WATER AND POWER
USDA, FOREST SERVICE
DOI, BUREAU OF LAND MANAGEMENT

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INTRODUCTION

The City of Los Angeles Department of Water and Power (LADWP) is proposing the Barren Ridge Renewable Transmission Project (BRRTP or Project) to access clean, renewable electrical energy resources in the Tehachapi Mountains and Mojave Desert areas, and to improve reliability and upgrade transmission capacity.

It has been determined that this Project is a major state and federal action that may significantly affect the quality of the human environment, therefore requiring preparation of an Environmental Impact Statement (EIS) as required by the National Environmental Policy Act (NEPA) and an Environmental Impact Report (EIR) as required by the California Environmental Quality Act (CEQA). As recommended by both Council of Environmental Quality NEPA Regulations (40 C.F.R. 1506.2) and CEQA Guidelines (Section 15170) a joint EIS/EIR document will be prepared for the Project. The EIS/EIR is an informational disclosure document used to inform public agency decision makers and the public of the environmental effects of a project, identify possible ways to eliminate or minimize the potential significant or adverse effects, and describe reasonable alternatives to the Proposed Action /Project. The U.S. Department of Agriculture, Forest Service (Forest Service) and the U.S. Department of the Interior, Bureau of Land Management (BLM) are the responsible lead agencies for preparation of the EIS; LADWP is the responsible lead agency for preparation of the EIR.

This Alternatives Development Report (1) documents the range of alternatives that have been considered and evaluated, (2) describes the approach and methods used in evaluating potential alternatives according to guidelines established under the NEPA and the CEQA, (3) provides rationale for recommendation to eliminate or retain alternatives for further study in the EIS/EIR, and (4) recommends reasonable alternatives that would meet the purpose and need for the Project. The lead agencies' responsible authorities will decide the final alternatives that will be carried forward for full analysis in the EIS/EIR.

Environmental resource Technical Reports are being prepared for agency review. The Technical Reports will include full detailed impact analysis of each alternative that is currently under consideration as identified within this report, including the No Action alternative and a cumulative impact analysis. The Technical Reports will then serve as the basis for developing the EIS/EIR impact analysis for those alternatives approved by the lead agencies that will be carried forward for detailed consideration for the Project. This Alternatives Development Report includes preliminary environmental impact results from the Technical Reports.

1 PROJECT DESCRIPTION

The BRRTP is located in Kern and Los Angeles counties. It is approximately 75 miles in length and extends from the Barren Ridge Switching Station to Rinaldi Substation, and extends approximately 17 miles from the Castaic Power Plant to the proposed Haskell Canyon Switching Station. The proposed BRRTP includes the following:

- 1) Construction of approximately 60 miles of a 230 kilovolt (kV) double-circuit transmission line from the LADWP Barren Ridge Switching Station to Haskell Canyon;
- 2) Addition of approximately 12 miles of a 230 kV circuit on the existing double-circuit structures from Haskell Canyon to the Castaic Power Plant;
- 3) Upgrade of approximately 75 miles of the existing Barren Ridge-Rinaldi (BR-RIN) 230 kV transmission line with larger capacity conductors between the Barren Ridge Switching Station and the Rinaldi Substation;
- 4) Construction of a new electrical switching station in Haskell Canyon;
- 5) Expansion of the existing Barren Ridge Switching Station.

1.1 CONSTRUCTION OF NEW 230 KV TRANSMISSION LINE

The proposed double-circuit 230 kV transmission line in the BRRTP would carry two Alternating Current (AC) lines from the Barren Ridge Switching Station to the proposed Haskell Canyon Switching Station in Haskell Canyon.

The proposed tower structures for the new lines are self-supporting double-circuit steel lattice towers fabricated from unpainted galvanized steel members. Depending on the environmental conditions of the surrounding terrain, the height of the proposed lattice structures would range from approximately 100-195 feet, with an average tower-to-tower span of 1,000 to 1,100 feet. Exact structure placement would be determined during engineering surveys and detailed design studies for the preferred route. A variety of engineering, constructability, existing access, and environmental issues are considered during structure siting within permitted rights-of-way.

Self-supporting, tubular steel poles (TSP) would be used for mitigating purposes where appropriate to reduce potential impacts, such as conflicts with cultivation on agricultural lands. The TSPs would have an average height range between 95-180 feet, depending on the conditions of the surrounding terrain, with an average tower-to-tower span of 700 to 800 feet.

The alignment of a tower along a transmission line determines whether it is a suspension, angle, or dead-end tower. Towers along the straight portion of a transmission line are known as suspension towers, and sometimes referred to as tangent towers. Angle towers are of the same basic configuration as suspension towers; however, they are located at angles in the transmission line and are designed to resist angular cable pulls. The main difference is in the tower "arms," insulator systems, and tower weights. At the end of a transmission line, large angle turn, or each side of a major crossing such as a large river, highway, or large valley, dead-end towers would be required to add longitudinal strength along the transmission line. They are built to be stronger, and often have a wider base and stronger insulator strings than the suspension towers that are located along a majority of the transmission line.

Between Power Plant #2 and the proposed Haskell Canyon Switching Station, existing four-circuit structures would be utilized for both the new double-circuit 230 kV transmission line and the reconductoring of the existing BR-RIN transmission line. To accommodate the additional weight, some of the existing towers may require minor modifications, such as replacement of steel members or reinforcement of footings.

The BRRTP will utilize self-supporting steel lattice structures and TSPs requiring concrete foundations. Steel lattice structures would require four footings (one for each leg); TSPs would require a single larger footing. Footings would be of the steel-reinforced concrete pier type and be cast in place. The concrete

footings for lattice structures would be between 2.5 and 5.0 feet in diameter with an average depth of 20 feet depending on soil conditions. Single foundations for TSPs would consist of augured holes approximately five to seven feet in diameter and 15 to 30 feet deep, depending on conditions. Formwork and galvanized steel reinforcing would be assembled in the hole prior to casting concrete in place. Reinforcing steel would become integral to the lower leg of the steel lattice structure during installation. An above-ground concrete form placed over each hole would result in a final concrete foundation height of 0.5 to 2.0 feet above ground level.

The conductor (or “wires”) being considered for the new double-circuit 230 kV transmission line and installation of the Castaic – Haskell Canyon #4 circuit on existing structures is a bundled 715.5 kcmil “Starling” ACSS/AW (aluminum conductor steel supported/aluminum-clad steel wire). The reconductoring of the BR-RIN transmission line between Barren Ridge Switching Station and Rinaldi Substation would require a bundled 1,433.6 kcmil “Merrimack” ACSS/TW/HS (aluminum conductor steel supported/trapezoidal wires/high strength) conductor.

Each circuit would consist of three phases (or conductors). To increase the current-carrying capability of the transmission lines and reduce power loss, the proposed Project would utilize bundled conductors installed for each phase. Bundled conductors consist of two or more conductor cables connected by a non-conducting spacer. The new double-circuit 230 kV transmission line utilizing double-bundled conductors would utilize a total of 12 conductors.

LADWP follows many of the standards established by the California Public Utilities Commission and the minimum conductor height above the ground, under normal operation of the line, is 31 feet (General Order 95). Greater clearances may be required in certain areas. Minimum conductor clearance would dictate the exact height of each tower based on topography and safety clearance requirements.

Insulators are used to provide the physical connection of conductors to structures. These system components are made of very low conducting materials (polymer insulators) that inhibit the flow of electric current from energized conductors to ground or to other energized system elements. Insulators and their associated hardware are to be configured in an “I” assembly to support conductors while maintaining required distances between phases and grounded structures. Each “I” string would consist of six-inch diameter insulators between six and eight feet long.

To shield conductors from the hazard of direct lightning strikes by transferring lightning currents into the ground, overhead ground wires (open shield wires) would be installed on the tops of new structures.

Construction of a transmission line involves the following general sequence of events: surveying the centerline; identifying and constructing access roads; clearing right-of-way and tower sites (including construction yards and batch plants); installing foundations; assembling and installing the towers; clearing, pulling, tensioning, and splicing sites; installing ground wires and conductors; installing counterpoise/ground rods; and cleanup and site reclamation. Various phases of construction would occur at different locations throughout the construction process. This would require several crews operating at the same time and in different locations.

Existing paved and unpaved highways and roads would be used where possible. Where new access roads are required, they would be constructed to support the weight of these vehicles and would typically be 16 feet wide, consisting of a 12- to 14-foot driving surface with a side drainage system between one and two feet in width. Permanent roads would be constructed where necessary for operation or maintenance, or where it is required by the landowner or land managing agency. Dependent upon final design and mitigation, some temporary access roads maybe constructed as part of the Project. These would typically be 16 foot wide roads, and would likely have no improved ditch drainage systems. Most temporary roads would be constructed by crushing vegetation. In some areas, material and topsoil from the temporary

roads would be bladed to one or both sides to facilitate rehabilitation. Following construction, bladed material can be re-spread across the disturbed road section.

It is anticipated that several construction yards or staging areas would be required for storing materials, construction equipment, construction vehicles, and temporary construction offices. Staging areas would be approximately five acres, and located near each end of the transmission line and at various locations approximately every 15 miles along the proposed line route.

1.2 ADDITION OF NEW 230 KV CIRCUIT

Between the proposed Haskell Canyon Switching Station and the existing Castaic Power Plant, LADWP proposes the addition of approximately 12 miles of a new 230 kV transmission circuit onto existing Castaic – Olive 230 kV Transmission Line structures (towers 1-1 through 12-1). This new circuit would be called Castaic – Haskell Canyon #4 and would utilize the same conductor (2,156 kcmil “Bluebird” ACSS/AW) as that proposed for the new 230 kV transmission line.

The addition of a new circuit on existing towers would require many of the same activities of a new transmission line (surveying of right-of-way, rehabilitation of existing access and spur roads, clearing of right-of-way, conductor installation, ground rod installation, and cleanup). However, all work would be within existing right-of-way and no new towers would be constructed. Some towers may need to be modified or reinforced to carry the additional weight of the new conductor.

1.3 RECONDUCTORING OF EXISTING TRANSMISSION LINE

LADWP proposes the reconductoring of approximately 75 miles of the existing BR-RIN 230 kV transmission line with larger conductors from the Barren Ridge Switching Station to Rinaldi Substation (towers 176-1 through 251-1). The existing conductors (954/ 2,312 kcmil) would be replaced with a new 1,433.6 kcmil “Merrimack” ACSS/TW/HS conductor.

The upgrade of the existing BR-RIN would also require many of the same activities of the new transmission line (surveying of right-of-way, rehabilitation of existing access and spur roads, clearing of right-of-way, conductor installation, ground rod installation, and cleanup). The existing conductor would be pulled out using a pulling line, and this line would then be used to pull in the new conductor. All work would remain within the existing right-of-way, with no additional right-of-way required. Some of the towers will need to be modified, replaced, and/or foundations reinforced/replaced to carry the additional weight of the new heavier conductor.

1.4 CONSTRUCTION OF NEW SWITCHING STATION

As a component of the BR RTP, LADWP proposes the construction of a new switching station in Haskell Canyon, south of the Angeles National Forest. It would be constructed on LADWP-owned property at the convergence of several existing and proposed 230 kV transmission lines (the existing BR-RIN, the proposed double-circuit Barren Ridge-Haskell Canyon, the existing Castaic-Northridge, Castaic-Sylmar, and Castaic-Olive, and the proposed Castaic to Haskell Canyon).

The station would be approximately 400 feet by 600 feet to accommodate the necessary equipment such as steel support structures, circuit breakers, disconnect switches, and associated equipment, and a relay house and control house. The relay and control houses would each be approximately 30 feet long by 12 feet wide by 10 feet high and constructed of gray concrete block. The station yard would include a paved internal access road approximately 16 feet wide, and would be enclosed by chain-link fencing with barbed-wire extension for security.

Construction of the new Haskell Canyon Switching Station would consist of preconstruction surveys, clearing and grading of access roads, site grading and drainage development, installation of concrete foundations and steel support structures, installation of below- and above-ground electrical conduits for equipment power and control, installation of below- and above-grade grounding conductors, and installation of control and relay houses. Equipment required for station construction would include graders and excavators, backhoes, drill rigs, concrete trucks, water trucks, trucks and flatbed trailers. Cranes, man-lifts, portable welding units, line trucks and mechanic trucks would also be required. Construction would require an estimated 12 months and approximately 60 workers.

Site preparation work for the station would involve clearing and grading of access roads, clearing of the switchyard site, the cut-and-fill grading of the site, and placement and compaction of structural fill that would serve as a base for switching station facilities. The site would be graded to maintain current drainage patterns as much as possible. An approximately 16 foot wide paved road and 100 foot by 100 foot gravel parking area would be required for worker access and parking. The yard would be covered with crushed-rock aggregate. Native vegetation would be re-established where possible outside the switchyard fence.

Following site grading and development, reinforced concrete foundations would be installed to support the steel structures and electrical equipment and control facilities. It is estimated that approximately 1,500 cubic yards of concrete would need to be delivered to the switching station site for the foundations. Foundation work would require approximately 180 trips to the site by 40-ton, 10-yard capacity concrete trucks over an approximate 60 day working period. Subsequent to the foundation installation, trenches would be dug to facilitate placement of copper conductors for the station grounding mat.

Multiple transmission lines would connect into the switching station (e.g., the new and existing Barren Ridge-Haskell and Castaic-Haskell Canyon transmission lines) and would need support and require the installation of galvanized steel structures. High-voltage bus work consisting of aluminum jumpers and tubing would be installed.

1.5 EXPANSION OF EXISTING SWITCHING STATION

The existing Barren Ridge Switching Station is approximately 250 feet by 500 feet and contains three existing positions occupied by the Pine Tree Wind Development and BR-RIN Transmission Line; no additional positions are available.

During scoping, the original project description did not include the expansion of the Barren Ridge Switching Station. However, to allow connection of a new double-circuit transmission line and allow interconnections of future renewable energy projects in the Tehachapi Mountains and Mojave Desert area, LADWP is proposing to expand the existing station to the east side by 235 feet by 500 feet. The station would almost double in size (485 feet by 500 feet or approximately 5.6 acres) to include electrical structures and equipment for the addition of transmission lines, a material staging area, roadway within the station, and drainage area.

Expansion of the existing switching station would be very similar to the construction of the Haskell Canyon Switching Station. Expansion would consist of preconstruction surveys, site preparation and grading, installation of reinforced concrete foundations, installation of electrical conduits for equipment power and control, and installation of structures and equipment.

It is estimated that approximately 700 cubic yards of concrete would need to be delivered to the switching station site for the foundations. Foundation work would require approximately 80 trips to the site by 40-ton, 10-yard capacity concrete trucks over an approximate 45 day working period. Equipment required for station construction would include graders and excavators, backhoes, drill rigs, concrete trucks, water

trucks, trucks and flatbed trailers. Cranes, man-lifts, portable welding units, line trucks and mechanic trucks would also be required. An estimated eight months with approximately 60 workers would be required to expand the station.

1.6 CONSTRUCTION WORK FORCE AND SCHEDULE

Construction for the BRRTP is anticipated to commence in early 2012. The NEPA Lead Agencies' Record of Decision and CEQA Lead Agency Notice of Determination (anticipated in fall of 2010) must be made prior to right-of-way procurement and construction. The target date for commercial operation of the Project is Fall/Winter 2013.

The construction of the new double-circuit 230 kV transmission line from the Barren Ridge Switching Station to the proposed Haskell Canyon Switching Station would take approximately 12.5 months to construct and require a total of approximately 134 workers, with a peak of 131 workers on any given day. The installation of a 230 kV circuit on existing double-circuit towers from the Castaic Power Plant to the proposed Haskell Canyon Switching Station would take approximately a month and a half and approximately 35 workers would be needed for this portion of the Project. The upgrade and reconductoring of the existing BR-RIN would take approximately eight months and a total of approximately 155 workers to construct, with a peak of 120 workers on any given day. The construction of a new 400 foot by 600 foot Haskell Canyon Switching Station would take approximately 12 months to construct and require a total of approximately 60 workers, with a peak of 38 workers on any given day. The expansion of the existing Barren Ridge Switching Station would take approximately eight months and a total of approximately 60 workers, with a peak of 38 workers on any given day.

The BRRTP components are anticipated to be constructed in the staggered sequence illustrated below in Figure 1 and Table 1. The construction of all Project components would take approximately two years to construct. Approximately 447 total workers would be required with a peak of 173 workers on any given day during construction. Table 1 summarizes the BRRTP's construction workforce and schedule. To allow for any delays in the Project, three weeks of float time were included for the new 230 kV transmission line and reconductoring efforts, and an additional two weeks were included for the stringing of the second circuit between Castaic and Haskell Canyon.

FIGURE 1. ANTICIPATED CONSTRUCTION SEQUENCE

PROJECT COMPONENT	ANTICIPATED CONSTRUCTION SEQUENCE
New 230 kV Transmission Line	Weeks 1 – 54
New Haskell Canyon Switching Station	Weeks 1 – 46
Expansion of Barren Ridge Switching Station	Weeks 47 - 77
Addition of 230 kV Circuit	Weeks 53 - 88
Reconductor BR-RIN	Weeks 55 - 88

TABLE 1. CONSTRUCTION WORKFORCE AND SCHEDULE

PROJECT COMPONENT	CONSTRUCTION (START AND END WEEKS)	CONSTRUCTION DURATION (MONTHS)	TOTAL # OF WORKERS	PEAK # OF WORKERS AT ANY GIVEN TIME
New 230 kV Transmssion Line	1 – 54	12.5	134	131
New Haskell Canyon Switching Station	1 – 46	12	63	38
Expansion of Barren Ridge Switching Station	47-77	8	60	38
Addition of 230 kV Circuit	51 – 56	1.5	35	35
Reconductor BR-RIN	55 – 88	9	155	120
ALL COMPONENTS	Weeks 1 – 88	22* months	412 Total Workers	173* Peak Workers

*The value represents the total for the staggered construction of the Project components; it is not reflective of the sum of all the components.

2 NEPA & CEQA REQUIREMENTS FOR ALTERNATIVES

NEPA and CEQA both require consideration of a reasonable range of alternatives to the proposed Project that would feasibly attain most of the basic objectives of the Project, but avoid or substantially lessen any of the significant or adverse effects of the Project. The NEPA and CEQA requirements for the identification of Project alternatives are described in Sections 2.1 and 2.2.

2.1 NEPA

The Council on Environmental Quality's NEPA Regulations (40 C.F.R. 1502.14) require an EIS to present the environmental impacts of the proposed action and the alternatives in comparative form, thus sharply defining the issues and providing a clear basis for choice among options by the decision makers and the public. The alternatives analysis shall:

- (a) Rigorously explore and objectively evaluate all reasonable alternatives and, for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated.
- (b) Devote substantial treatment to each alternative considered in detail, including the proposed action, so that reviewers may evaluate their comparative merits.
- (c) Include reasonable alternatives not within the jurisdiction of the lead agency.
- (d) Include the alternative of no action.
- (e) Identify the agency's preferred alternative if one or more exists, in the draft statement, and identify such alternative in the final statement unless another law prohibits the expression of such a preference.
- (f) Include appropriate mitigation measures not already included in the proposed action or alternatives.

2.2 CEQA

CEQA Guidelines (Section 15126.6) state the following:

- (a) An EIR shall describe a range of reasonable alternatives to the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives.
- (b) The discussion of alternatives shall focus on alternatives to the project or its location which are capable of avoiding or substantially lessening any significant effects of the project, even if these alternatives would impede to some degree the attainment of the project objectives, or would be more costly.
- (c) The EIR should briefly describe the rationale for selecting the alternatives to be discussed. The EIR should also identify any alternatives that were considered by the lead agency but were rejected as infeasible during the scoping process and briefly explain the reasons underlying the lead agency's determination. Among the factors that may be used to eliminate alternatives from detailed consideration in an EIR are: (i) failure to meet most of the basic project objectives, (ii) infeasibility, or (iii) inability to avoid significant environmental impacts.
- (d) The EIR shall include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the proposed project.
- (e) The EIR shall include the evaluation of the "No project" alternative.
- (f) The alternatives shall be limited to ones that would avoid or substantially lessen any of the significant effects of the project. Of those alternatives, the EIR need examine in detail only the ones that the lead agency determines could feasibly attain most of the basic objectives of the project. The range of feasible alternatives shall be selected and discussed in a manner to foster meaningful public participation and informed decision making.

3 IDENTIFICATION OF TRANSMISSION LINE SEGMENTS

A range of transmission routing segments were identified through a siting study, the scoping process, and supplemental studies and consultations. These studies were conducted to identify potential geographical routes (or segments) that could be further studied for the proposed double-circuit 230 kV transmission line between Barren Ridge and Haskell Canyon.

3.1 SITING AND ROUTING EVALUATION

In May of 2007, LADWP completed a 230 kV Transmission Line Siting Study. The study evaluated a number of environmental resources and engineering constraints in order to identify reasonable routing segments for the proposed Barren Ridge – Castaic 230 kV Transmission Project (the project name was changed to the Barren Ridge Renewable Transmission Project in March 2008).

A study area for the siting of an electrical transmission line was identified by utilizing physical features of the area to create boundaries. Interstate 5 became the western boundary, the northern boundary followed the Tehachapi Mountains, State Route 14 and Edwards Air Force Base created an eastern boundary, and the Santa Clara River and San Gabriel Mountains formed the southern boundary. The area measured approximately 819,000 acres (approximately 1,280 square miles) and was utilized as the basis for data inventory and mapping and sensitivity analyses (see Figure 2).

Environmental resource data was gathered within the study area for six disciplines: land use, visual resources, biological (wildlife and botanical) resources, cultural resources, water resources, and geohazards. Resource data was then mapped utilizing a geographic information system (GIS), and ground reconnaissance was completed to verify and supplement inventory mapping.

Resource sensitivity was developed for the following environmental resources: land use, cultural resources, biological resources, water resources, visual resources, and geohazards. Sensitivity is defined as a measure of probable adverse response of a resource to direct and indirect impacts associated with the construction, operation, and maintenance of the proposed high-voltage transmission line. Sensitivity levels were categorized as exclusion, high avoidance, moderate avoidance, or low avoidance. Areas of low sensitivity and linear features (highways, existing transmission lines, pipelines, aqueducts, etc.) were considered siting opportunities for the new 230 kV transmission line. The sensitivity levels for each of the environmental resources may be found in Appendix A.

Following the mapping of resource sensitivity constraints, GIS layers were overlaid to create a composite sensitivity map (see Figure 2). Exclusion areas are identified on the map with the color red, orange represents areas of high sensitivity, yellow denotes moderately sensitive areas, and gray represents low sensitivity or areas of opportunity for the siting of a new 230 kV transmission line.

The composite sensitivity map was used as a basis for identifying areas that provided the fewest constraints for the siting of a new transmission line. These areas are shaded in green in Figure 3 (Siting Study Corridor Map) and are generally within existing utility corridors. These corridors were further refined to consider reliability constraints and reasonable routing options for the new 230 kV transmission line from the Barren Ridge Switching Station to the proposed Haskell Canyon Switching Station. For example, the Eastern “Acton” Corridor, located on the southern portion of Figure 3 from Vincent Substation to the Proposed Haskell Canyon Switching Station, was eliminated from further consideration because this corridor was already congested and there was no need to connect into the Vincent Substation. Another example was the Midway to Vincent Corridor that traversed west to east, instead of north (Barren Ridge Switching Station) to south (Rinaldi Substation). This corridor would be much longer and has the potential to impact the greatest amount of sensitive habitat on the Angeles National Forest.

The Composite Sensitivity Map did not reflect reconductoring of the existing BR-RIN transmission line from Barren Ridge Switching Station to Rinaldi Substation because routing alternatives for reconductoring were not considered. Later, the study area boundary was extended to the Rinaldi Substation.

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FIGURE 2. SITING STUDY COMPOSITE SENSITIVITY MAP.



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FIGURE 2. SITING STUDY COMPOSITE SENSITIVITY MAP.

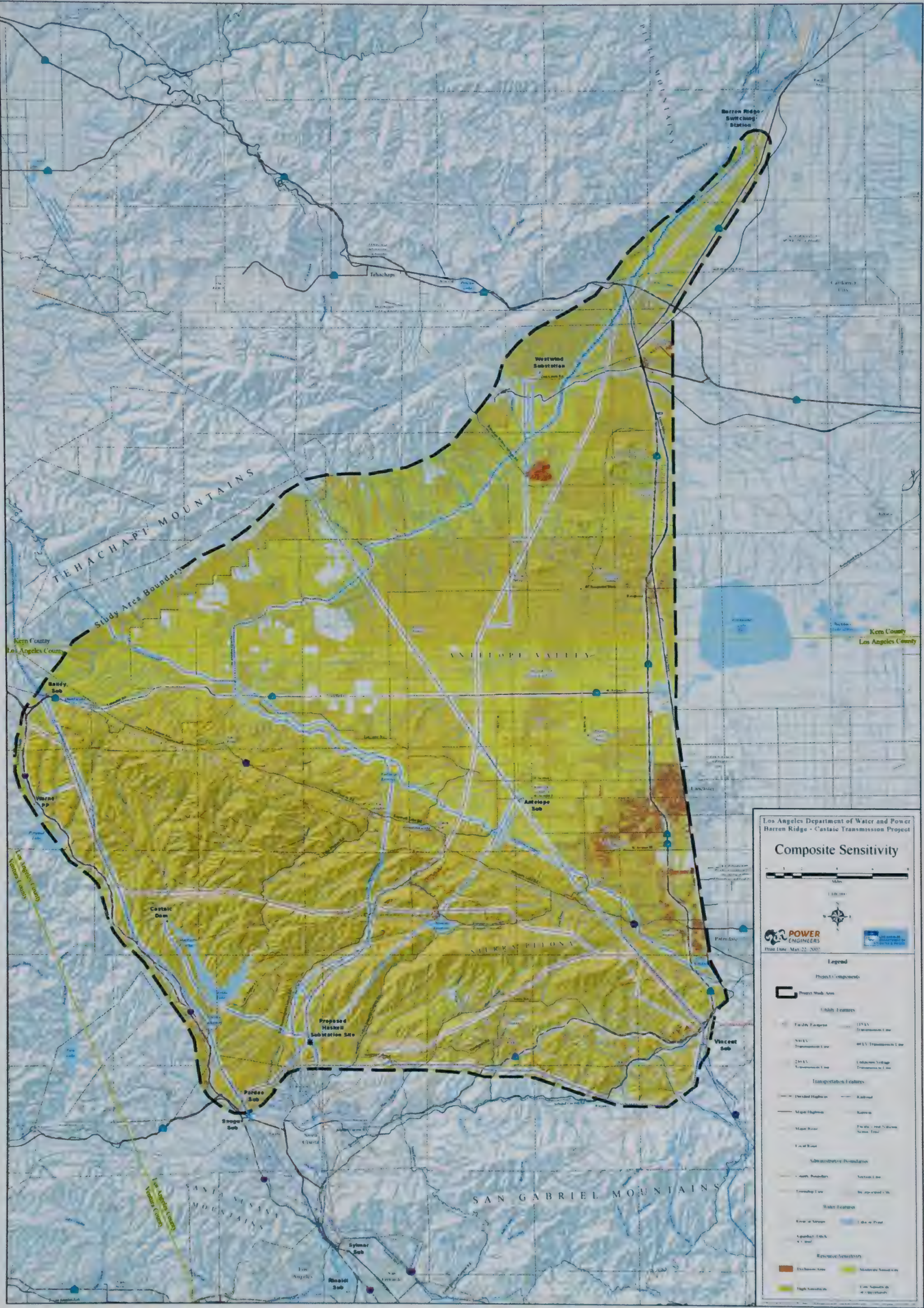


FIGURE 3. SITING STUDY CORRIDOR MAP.



3.1.1 Siting and Routing Evaluation Results

Following the identification of potential transmission line corridors as shown on Figure 3, a field review was conducted to verify the feasibility of those corridors. Several potential corridors were eliminated from further consideration due to dense urban development, other conflicting land uses, transmission reliability constraints, or the potential to add significant length to the proposed transmission line. As a result, over 200 miles of preliminary routing opportunities or corridors (also known as Segments A through K) were identified for the siting of a new 230 kV transmission line, reconductoring of an existing transmission line, and addition of a new 230 kV circuit. A brief discussion of the Segments are included below and illustrated in Figure 4 (Proposed Project and Preliminary Alternative Corridors Map). Table 2 summarizes the total length and miles of private and public lands traversed by each segment. The segments were established using existing transmission lines, where present, as the centerline of the half-mile-wide corridors. The Segments were considered routing opportunities for the proposed Project. These segments were later combined to create end-to-end routing “alternatives” as discussed further in this report, in Section 6.0.

Segment A is 13 miles long; it traverses 4 miles of BLM-managed lands and 9 miles of privately owned lands. It runs from LADWP’s Barren Ridge Switching Station to just north of Mojave and is located on approximately four miles of BLM-managed lands. It contains LADWP’s existing 230 kV Barren Ridge – Rinaldi Transmission Line (BR-RIN) and 500 kV Pacific Direct Current Intertie (PDCI).

Segment B is 27.5 miles long and traverses privately owned lands the entire length. It starts just north of Mojave, CA and heads south towards the Antelope Valley California Poppy Reserve. It also contains LADWP’s existing 230 kV BR-RIN and 500 kV PDCI.

Segment C is 22 miles and traverses privately owned lands the entire length. It also starts just north of Mojave and heads southwest to approximately Cottonwood Creek. This corridor would be located parallel to the Los Angeles Aqueduct.

Segment D is 48 miles long; traverses 0.3 miles of California Department of Fish and Game-managed lands, 16 miles of USFS-managed lands, and 32 miles of privately owned lands. It generally parallels the Los Angeles Aqueduct from about Cottonwood Creek and heads south to Lancaster Road, and then west to the Interstate 5 utility corridor within the Angeles National Forest. Five high-voltage transmission lines and oil and gas pipelines occur along the Interstate 5 section of the segment.

Segment E is 11 miles long and traverses privately owned property the entire length. It starts just south of Cottonwood Creek and heads southeast towards the Antelope Valley California Poppy Reserve. Two existing high-voltage transmission lines occur in this corridor.

Segment F is the shortest corridor at 4 miles long and traverses privately owned property the entire length. It extends from the Antelope Valley California Poppy Reserve to Southern California Edison’s (SCE’s) Antelope Substation. Two existing high-voltage transmission lines also occur in this segment.

Segment G is 21 miles long and traverses 8 miles of privately owned lands, and 13 miles of USFS-managed lands. It runs from the Antelope Valley California Poppy Reserve to Haskell Canyon. LADWP’s existing 230 kV BR-RIN and 500 kV PDCI also occur along this segment.

Segment H is 20 miles long and traverses 7 miles of privately owned lands and 13 miles of USFS-managed lands. It runs mostly parallel to SCE’s Antelope-Pardee line that was recently constructed. The last 1.5 miles follow the route of the old SCE 66 kV Saugus-Del Sur line, which has been removed, and fall outside the designated Forest Service corridor in order to take a more direct route into the Haskell site.

Segment I is 31 miles long and traverses 27 miles of privately owned lands and 4 miles of USFS-managed lands. It starts at the Antelope Substation headed southeast to Palmdale (four existing high-voltage transmission lines occur along this portion), then makes a sharp turn and heads southwest to

FIGURE 3. SITING STUDY CORRIDOR MAP.



3.1.1 Siting and Routing Evaluation Results

Following the identification of potential transmission line corridors as shown on Figure 3, a field review was conducted to verify the feasibility of those corridors. Several potential corridors were eliminated from further consideration due to dense urban development, other conflicting land uses, transmission reliability constraints, or the potential to add significant length to the proposed transmission line. As a result, over 200 miles of preliminary routing opportunities or corridors (also known as Segments A through K) were identified for the siting of a new 230 kV transmission line, reconductoring of an existing transmission line, and addition of a new 230 kV circuit. A brief discussion of the Segments are included below and illustrated in Figure 4 (Proposed Project and Preliminary Alternative Corridors Map). Table 2 summarizes the total length and miles of private and public lands traversed by each segment. The segments were established using existing transmission lines, where present, as the centerline of the half-mile-wide corridors. The Segments were considered routing opportunities for the proposed Project. These segments were later combined to create end-to-end routing “alternatives” as discussed further in this report, in Section 6.0.

Segment A is 13 miles long; it traverses 4 miles of BLM-managed lands and 9 miles of privately owned lands. It runs from LADWP’s Barren Ridge Switching Station to just north of Mojave and is located on approximately four miles of BLM-managed lands. It contains LADWP’s existing 230 kV Barren Ridge – Rinaldi Transmission Line (BR-RIN) and 500 kV Pacific Direct Current Intertie (PDCI).

Segment B is 27.5 miles long and traverses privately owned lands the entire length. It starts just north of Mojave, CA and heads south towards the Antelope Valley California Poppy Reserve. It also contains LADWP’s existing 230 kV BR-RIN and 500 kV PDCI.

Segment C is 22 miles and traverses privately owned lands the entire length. It also starts just north of Mojave and heads southwest to approximately Cottonwood Creek. This corridor would be located parallel to the Los Angeles Aqueduct.

Segment D is 48 miles long; traverses 0.3 miles of California Department of Fish and Game-managed lands, 16 miles of USFS-managed lands, and 32 miles of privately owned lands. It generally parallels the Los Angeles Aqueduct from about Cottonwood Creek and heads south to Lancaster Road, and then west to the Interstate 5 utility corridor within the Angeles National Forest. Five high-voltage transmission lines and oil and gas pipelines occur along the Interstate 5 section of the segment.

Segment E is 11 miles long and traverses privately owned property the entire length. It starts just south of Cottonwood Creek and heads southeast towards the Antelope Valley California Poppy Reserve. Two existing high-voltage transmission lines occur in this corridor.

Segment F is the shortest corridor at 4 miles long and traverses privately owned property the entire length. It extends from the Antelope Valley California Poppy Reserve to Southern California Edison’s (SCE’s) Antelope Substation. Two existing high-voltage transmission lines also occur in this segment.

Segment G is 21 miles long and traverses 8 miles of privately owned lands, and 13 miles of USFS-managed lands. It runs from the Antelope Valley California Polly Reserve to Haskell Canyon. LADWP’s existing 230 kV BR-RIN and 500 kV PDCI also occur along this segment.

Segment H is 20 miles long and traverses 7 miles of privately owned lands and 13 miles of USFS-managed) runs mostly parallel to SCE’s Antelope-Pardee line that was recently constructed. The last 1.5 miles follow the route of the old SCE 66 kV Saugus-Del Sur line, which has been removed, and fall outside the designated Forest Service corridor in order to take a more direct route into the Haskell site.

Segment I is 31 miles long and traverses 27 miles of privately owned lands and 4 miles of USFS-managed lands. It starts at the Antelope Substation headed southeast to Palmdale (four existing high-voltage transmission lines occur along this portion), then makes a sharp turn and heads southwest to

Haskell Canyon (two of LADWP's existing high-voltage transmission lines occur along this portion). A majority of this segment would be located outside of NFS lands.

Segment J is 12 miles long and traverses 4.7 miles of privately owned lands and 7.3 miles of Los Angeles County Department of Parks and Recreation (LAP & R)-managed lands. It runs parallel to LADWP's existing Castaic to Rinaldi 230 kV transmission line from the Castaic Power Plant to Haskell Canyon.

Segment K is 15.4 miles long and traverses 14. miles of privately owned lands, and 0.8 miles of Mountains Recreation and Conservation Authority (MRCA)-owned lands. It starts at Haskell Canyon and heads south to LADWP's Rinaldi Substation. This segment has seven existing LADWP transmission lines.

TABLE 2. SEGMENT LENGTHS AND JURISDICTIONS TRAVERSED.

Segment	Total Length (miles)	Jurisdiction
A	13	4 miles BLM 9 miles private
B	28	28 miles private
C	22	22 miles private
D	48	0.3 CDFG 16 miles USFS 32 miles private
E	11	11 miles private
F	4	4 miles private
G	21	13 miles USFS 8 miles private
H	20	13 miles USFS 7 miles private
I	31	27 miles of private 4 miles of USFS
J	12	7 miles LAP&R 4 miles private
K	15	1 mile MRCA 14 miles private

FIGURE 4. PROJECT COMPONENTS AND PRELIMINARY ALTERNATIVE CORRIDORS MAP.



Haskell Canyon (two of LADWP's existing high-voltage transmission lines occur along this portion). A majority of this segment would be located outside of NFS lands.

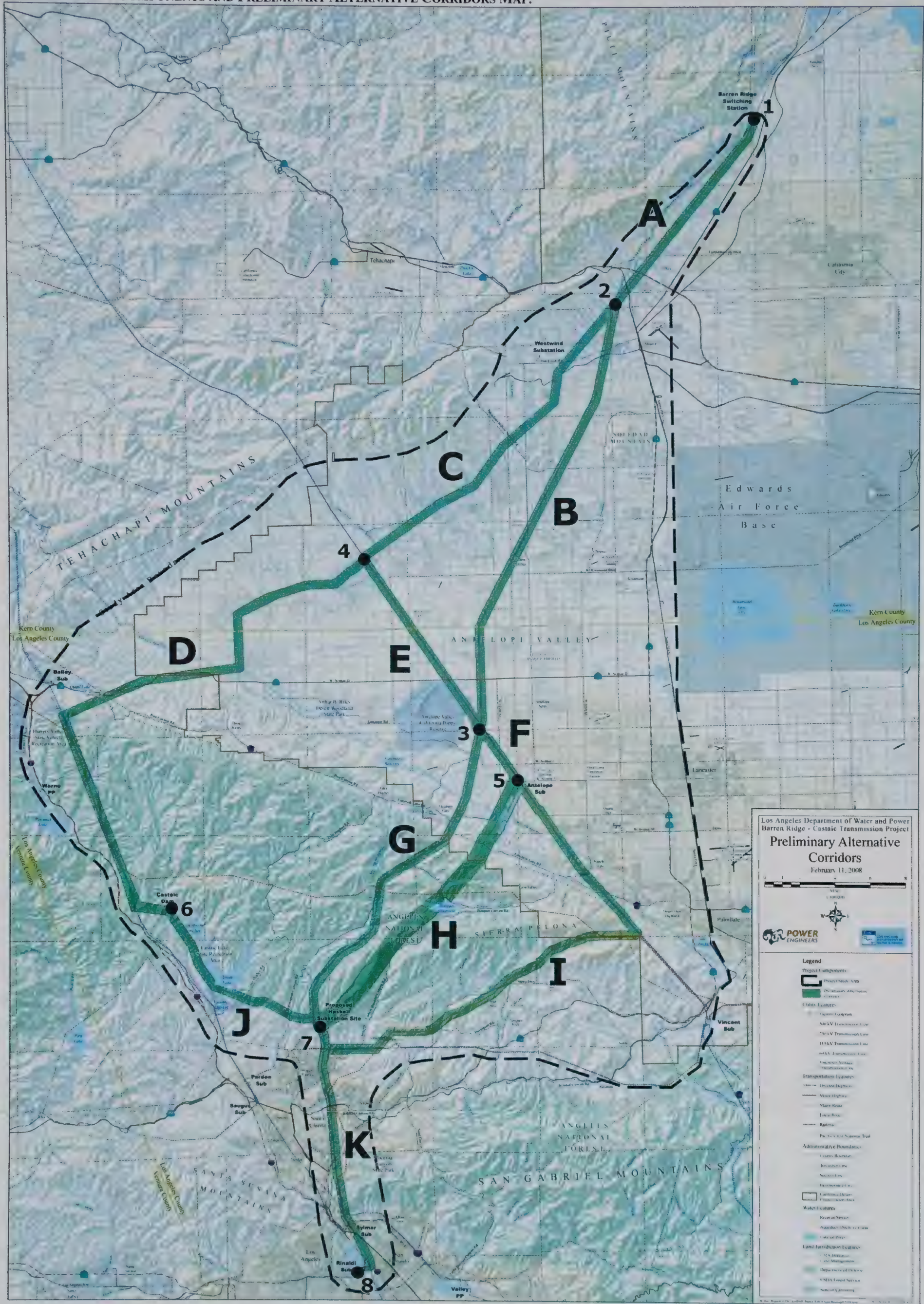
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3.2 SCOPING PROCESS

In Spring 2008, public scoping for the BR RTP was conducted to determine the scope of issues to be addressed, and identify the range of actions, alternatives, mitigation measures, and environmental effects to be analyzed in the Draft EIS/EIR.

Scoping was initiated by publication in the Federal Register of a Notice of Intent (NOI) to prepare a joint EIS/EIR. A similar Notice of Preparation (NOP) was filed with the California State Clearinghouse on April 7, 2008. The NOI/NOP requested all comments be received by May 7, 2008. It described the proposed Project, the agencies' scoping and environmental review process, and contact information. It served as an invitation for state, local, and other federal agencies, as well as the general public, to provide comments on the scope and content of the EIS/EIR. Approximately 500 NOPs were distributed to federal, state, regional, and local agencies, elected officials, organizations and Native American groups.

In addition to the distribution of the NOP and publication of the NOI, approximately 7,200 newsletters were sent to agency representatives, elected officials, Native American Tribes, interested parties and organizations, and property owners within 500 feet of both sides of the proposed Project and preliminary alternatives in Los Angeles and Kern Counties. The newsletters contained the Project description, purpose and need for the Project, and map, described the environmental review process, announced public scoping meetings, and contained contact information, in both English and Spanish.

The Forest Service, BLM and LADWP conducted seven public scoping meetings from April 22 to May 1, 2008 in the following locations: Santa Clarita, Castaic, Agua Dulce, Lake Hughes/Elizabeth Lake, Lebec, Palmdale, and California City. The scoping meetings provided an opportunity to share information regarding the proposed Project and the decision-making processes, and listen to public and agency views on the range of issues and alternatives to be considered during the preparation of the Draft EIS/EIR. All meetings were conducted in an "open house" format to allow participants to attend any time between 5:30 p.m. and 8:30 p.m. A brief presentation video was shown by the Project team at 7 p.m. followed by a general "comment and question" session.

Additional opportunities for public input and information sharing throughout the scoping process were provided via a Project website, an e-mail address, a toll-free hotline, and formal press releases by the lead agencies. Meetings with several local town councils were also attended by representatives of the lead agencies.

3.2.1 Scoping Process Results

The scoping process indicated a number of primary concerns about potential impacts of the proposed Project or alternatives. These concerns covered a broad range of input, and included opposition to the Project, support for Project objectives but opposition to certain routes, information on both environmental and social impacts, concerns over the process used to involve the public, suggestions for alternatives to the proposed Project, and suggestions for mitigating impacts. Details of the input received during public scoping can be found in the Barren Ridge Renewable Transmission Project Scoping Report.

The comments received at the scoping meetings, as well as via phone, email and mail, were analyzed to identify the significant issues and formulate alternatives that would avoid or minimize adverse impacts to environmental resources. Issues are defined as "a point of disagreement, debate, or dispute about the proposed action based on effects identified through scoping." Issues were considered non-significant if they were: 1) outside the scope of the proposed action; 2) irrelevant to the decision to be made; 3) already decided by law, regulation, or policy; or 4) conjectural or not supported by scientific evidence. It is important to note that the source of these issues was both internal (inter-agency) and external (elected officials and public). Information from the draft technical reports was also considered in determining if issues are non-significant based on preliminary resource impacts. Analysis of this scoping information

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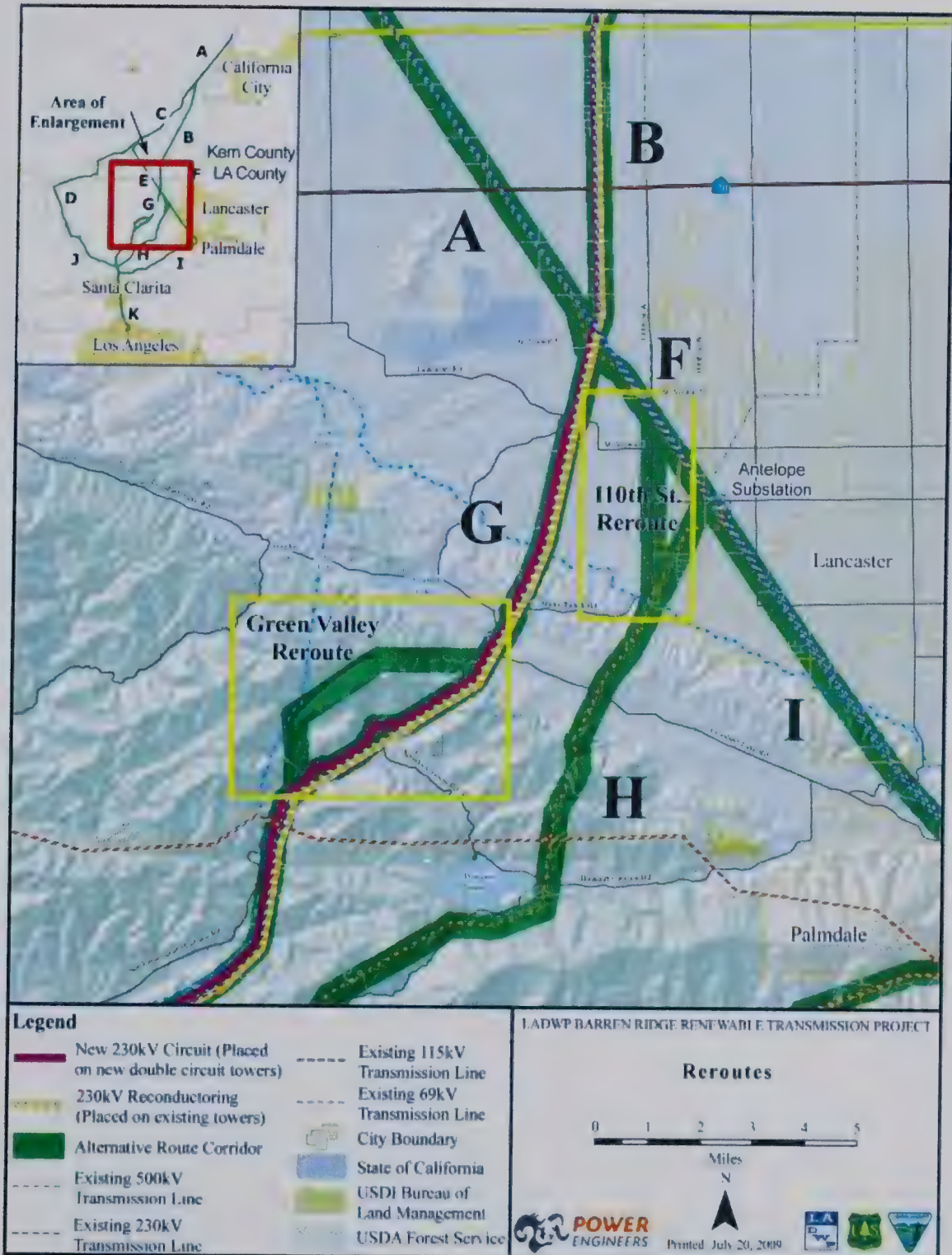
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identified significant issues associated with the following resources: biological resources, cultural resources, earth resources, water resources, land use, and recreation. These resources and their associated significant issues have been considered in the development of alternatives to the proposed action and will drive the analysis in the EIS/EIR. See Table 3 in Section 4.2 for a list of the significant issues identified through this scoping process and post-scoping public input.

The public suggested a number of alternatives to the proposed Project. Some residents in the Project area recommended the use of tubular steel mono poles instead of lattice steel structures, or suggested undergrounding of transmission lines. Some residents recommended the use of a single-tower system (multi-circuit towers) to accommodate the need for existing and proposed towers, as well as to minimize right-of-way expansion by combining new and existing lines on one set of structures. Direct Current (DC) lines were recommended as an alternative to the proposed alternating current (AC). Residents also requested the use of Niobium wire as an alternative to aluminum or copper wire. Electrical generation within the City of Los Angeles was recommended to avoid long distance electrical transmission distribution and impacts to rural communities. The BLM and Forest Service inquired about upgrading the electrical transmission system to a 500 kV instead of 230 kV transmission system.

Two localized routing alternatives were proposed by the public during the scoping period. The first, referred to as the Green Valley Re-route, was proposed by Green Valley residents and is located approximately one quarter-mile west of Green Valley along an existing fire road through NFS lands. This re-route would avoid possible impacts to the Green Valley community. The second routing suggestion, referred to as the 110th Street Re-route, was proposed by the residents along Segments F and H. The modification of Segment F would parallel 110th Street and connect Segments F and H instead of following along the existing transmission lines to Antelope Substation. This modification was proposed to follow property lines and avoid bisecting private property in the area. Please refer to Figure 5 for an enlarged view of the proposed reroutes.

FIGURE 5. PROPOSED RE-ROUTE MAP.



3.3 INTERDISCIPLINARY ROUTE IDENTIFICATION MEETING

In January 2009, the BRRTP interdisciplinary team, comprised of resource specialists from the Forest Service, BLM, LADWP, and the third-party environmental consultants, conducted a two-day workshop to identify end-to-end routing alternatives for the proposed double-circuit 230 kV transmission line from Barren Ridge Switching Station to the proposed Haskell Canyon Switching Station. A total of nine environmental resource groups were involved (air quality, biological resources, cultural resources, earth resources, engineering, land use/recreation, public involvement, visual resources and water resources). This workshop did not consider the no action alternative, alternative system configurations, construction methods, or detailed engineering and design.

Within this workshop, key members from the Forest Service, BLM, LADWP, and the third-party environmental consultants, referred to as the Steering Committee, shared information with the team on their recommendation for elimination of Segment D and the Green Valley Modification from further study in the EIS/EIR. Segment D was initially recommended for elimination because it would create overloading of existing electrical facilities south of the Castaic Power Plant, require significant modifications to the Castaic Power Plant and expansion of right-of-way south of Castaic, result in potential impacts to the Old Ridge Route (an eligible historical district on the National Register of Historic Places), and face difficulties in construction of new towers on unstable terrain on the Angeles National Forest. This recommendation was later reconsidered and Segment D was brought back into consideration based on public input during the post-scoping public involvement meetings (see Section 3.4). The Green Valley Re-route was also recommended for elimination from detailed study because it would create environmental impacts to Angeles National Forest lands that would be over a mile from the designated utility corridor. These impacts included crossing the Pacific Crest Trail over a mile from the existing lines, and construction disturbance along a relatively undisturbed and intact riparian area, South Portal Canyon. To minimize impacts to the community of Green Valley, LADWP proposed siting the new 230 kV transmission line a few hundred feet north of the existing lines to avoid the residences within the community, which was the objective of the original Green Valley Re-route.

Prior to the workshop, the BRRTP interdisciplinary team gathered into environmental resource groups and compiled their inventories and potential impacts of the remaining routes into impact tables. Maps were developed for each resource showing the levels of impact, represented by changes in color along the centerlines. At the meeting, each resource group presented potential impacts to their resource to the interdisciplinary team. The team took into consideration the potential significant issues from the construction, operation and maintenance of the proposed Project. The significant issues were then used to identify and assess the reasonable combinations of routing alternatives to the proposed action that would avoid or minimize adverse effects.

To identify end-to-end routing opportunities of the new 230 kV transmission line, localized sub-routes that had common endpoints were identified and compared utilizing the physiography of the Project. The northern portion of the Project area consists of flat desert areas of the Mojave Desert and Antelope Valley, and the southern portion contains the mountains of the Angeles National Forest. For example, the Antelope Valley sub-routes consisted of 1) Segments C and E or 2) Segment B. The sub-routes through the Forest were 1) Segment G, 2) Segments F and H, or 3) Segments F and I. (Segment D was recommended for elimination and not considered in the sub-route comparison.) The process of building end-to-end routing alternatives for the new 230 kV transmission line included comparisons of significant issues, tradeoffs, and agency concerns regarding the segments.

3.3.1 Route Identification Results

Six routing alternatives for the siting of a new 230 kV transmission line were identified for further study as a result of the interdisciplinary meeting. Refer to Figure 6 for the location of the routing alternatives.

The other Project components (reconductoring of the existing Barren Ridge-Rinaldi Transmission Line, addition of a new 230 kV circuit, and expansion of the existing Barren Ridge Switching Station) would utilize existing facilities and rights-of-way; therefore, these components do not have routing alternatives. These six routing alternatives, and others associated with the reconsideration of Segment D, are discussed in detail in section 6.0, with recommendations addressing their feasibility, ability to meet purpose and need, and potential to reduce environmental effects.

FIGURE 6. PRELIMINARY ALTERNATIVE ROUTES FOR THE NEW 230 kV TRANSMISSION LINE.*

Alternative Routes for New 230 kV Transmission Line



BARREN RIDGE RENEWABLE TRANSMISSION PROJECT



*The map shows preliminary alternatives that were recommended to be carried forward in the Draft EIS/EIR but were revised in Spring 2009 due to input from the public and further modifications of the routing alternatives.

3.4 INFORMATIONAL PUBLIC MEETINGS

In February 2009, LADWP conducted five informational public meetings in Lake Hughes, Mojave, Agua Dulce, Saugus, and Leona Valley. The public received updates regarding scoping results, preliminary resource studies, and the evaluation of alternative transmission line routes. These meetings also provided the public with additional opportunities to provide comments about the Project. The Project team presented the six routing alternatives for the new 230 kV transmission line identified for further study in the EIS/EIR, along with the recommendation to eliminate Segment D and the Green Valley Re-route from further study.

Public involvement is an integral part of the environmental review process. Although the scoping period ended in May 2008, all comments received via mail, email, and the Project hotline, and at the informational public meetings, have been accepted and considered by the Project Team. The comments received were very similar to those received during the scoping period. Residents in the Project area suggested localized alternatives to the proposed Project, consideration of in-basin generation of renewable resources, and sharing of transmission lines and renewable resources with other utility companies. Residents in Green Valley and Elizabeth Lake recommended the use of multi-circuit towers instead of numerous double- or single-circuit towers. Undergrounding was suggested along Segments B, C, and E, and in Elizabeth Lake, Green Valley, Leona Valley, and the Antelope Valley. Tubular steel poles (also known as monopoles) were recommended in Antelope Valley. To minimize the number of new transmission line corridors, residents in Quartz Hill recommended moving the 110th Street Reroute to 115th Street (following SCE's Tehachapi Renewable Transmission Project's proposed alignment through the area). The public also requested consideration of a 500 kV transmission line system instead of the proposed 230 kV transmission line system. Residents along Segment D suggested utilization of existing transmission line corridors instead of impacting undisturbed areas. Questions were asked about electromagnetic fields (EMF), eminent domain, and property values. Mitigation to purchase land around Lake Elizabeth was also suggested. The public as well as elected officials strongly recommended reconsideration of Segment D to avoid impacts to the communities of Elizabeth Lake, Green Valley, Leona Valley, and Agua Dulce.

As a result of the public meetings, BLM, the Forest Service, and LADWP modified Segment D. This modification made the segment feasible for the Project and is thus being carried forward into a routing alternative for consideration in the EIS/EIR. Further discussion on Segment D may be found in Section 5.3.2. Also, the list of significant issues was revised to include EMF, fire suppression, and potential for loss of habitat.

4 ALTERNATIVES EVALUATION METHODOLOGY

To determine which alternatives would be analyzed in the Draft EIS/EIR, alternatives were evaluated to determine whether they would:

1. Attain the purpose and need of the Project, as well as most of the basic objectives of the Project.
2. Have the potential to avoid or substantially lessen any of the significant or adverse effects of the Project.
3. Be considered feasible.

4.1 MEETING THE PURPOSE AND NEED

Each Lead Agency has its own purposes to consider in evaluating a proposed project/action and the alternatives to the proposed project/action. NEPA (CFR Title 40 Section 1502.13) and CEQA (Guidelines Section 15124(b)) explain that an agency's statement of objectives or purpose and need should describe the underlying purpose of the proposed project or need for action. Each agency's jurisdiction is unique

and the decision it is called upon to make is also unique; thus, each agency's statement of objectives or purpose and need is different. Therefore, the three Lead Agencies for the BR RTP have prepared their own purpose and need statements for the BR RTP, which are summarized below. Detailed purpose and need statements by the lead agencies may be found in Chapter 1 of the EIS/EIR.

4.1.1 LADWP'S Purpose and Need

LADWP's purpose and need for BR RTP is to:

- Reduce the environmental impacts associated with greenhouse gas emissions and create a more sustainable environment.
- Assist LADWP to meet Renewable Portfolio Standard (RPS) goals.
- Meet the growing electrical energy demands of the City of Los Angeles.
- Allow interconnection and expansion of LADWP's renewable energy in the Tehachapi Mountains and Mojave Desert areas.
- Increase LADWP's system reliability and flexibility in the utilization of renewable energy sources.
- Enable the delivery of renewable energy.

4.1.2 BLM's Need for Action

BLM's purposes in authorizing the proposed action, or an alternative, are the following:

- Minimize adverse environmental effects to BLM managed lands, such as the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resource, and archaeological values.
- Promote increased use of renewable energy and more efficient use of existing energy corridors, and designate new corridors to ease congestion.
- Avoid or minimize impacts to Areas of Critical Environmental Concern (ACEC—an area where special management attention is required to *protect and prevent irreparable damage* to important historic, cultural, or scenic values, fish and wildlife resources, or other natural systems or processes, or to protect life and safety from natural hazards).

4.1.3 Forest Service's Need for Action

Pursuant to the Federal Land Policy and Management Act (FLPMA) of 1976 (as amended), the Forest Service's need for action is to respond to applications from LADWP for a Special Use authorization to construct, maintain, and use transmission lines (and ancillary improvements) through the Santa Clara/Mojave Rivers Ranger District of the Angeles National Forest. The Forest Service will consider the application for use of NFS (National Forest System) lands to ensure that the proposed action is in the public interest and is appropriate based on the governing land management plan. FLPMA provides the authority to the Secretary of Agriculture (Forest Service) to issue, renew, or grant authorizations to occupy, use, or traverse NFS lands for the generation, transmission, and distribution of electrical power (43 U.S.C. 1761).

The Forest Service's purposes in authorizing the proposed action, or an alternative, are the following:

- Minimize adverse environmental effects to Natural Forest System lands, such as impacts to the following resources: visual, biological, cultural, recreation, air, soil, and water, among others as applicable (Forest Plan, Part 1, pp. 38 and 47; Part 2, pp. 7, 32, 35, 69, and 79);
- Review the eligible San Francisquito Canyon as a Wild and Scenic River. If the proposed action could compromise the outstandingly remarkable value(s), potential classification, or free-flowing character of an eligible wild and scenic river segment, a suitability study will be completed for that eligible river segment prior to initiating activities (Forest Plan, Standard 59, Part 3, p. 13);
- Minimize the effects of urbanization, or negative effects to open space and natural settings, on the Angeles National Forest (Forest Plan, Part 2, pp.35, 67-70);

Ensure that future Forest management activities such as wildland fire fighting, among others, are not detrimentally affected by the location and/or design of the proposed action (Region 5 Supplement FSM 2726.43; Forest Plan, Part 1, p. 19; Part 2, p. 37); and
Ensure that the location of the transmission line on NFS lands maximizes the accommodation of future utility needs (Forest Plan, Part 2, p. 121; Part 3, p. 59).

4.2 POTENTIAL TO AVOID OR MINIMIZE ENVIRONMENTAL EFFECTS

Per NEPA Regulations (40 C.F.R. Section 1500.2(e)), the NEPA process is used to identify and assess the reasonable alternatives to proposed actions that will avoid or minimize adverse effects of these actions upon the quality of the human environment. CEQA Guidelines (Section 15126.6(b)) also state that the discussion of alternatives shall focus on alternatives to the project or its location which are capable of avoiding or substantially lessening any significant effects of the project, even if these alternatives would impede to some degree the attainment of the project objectives, or would be more costly.

Through scoping, subsequent public involvement efforts, and preparation of preliminary technical reports, the following potentially significant issues were identified with the construction, operation and maintenance of the proposed BR RTP.

TABLE 3. SIGNIFICANT ISSUES OF THE BR RTP

RESOURCE	POTENTIAL SIGNIFICANT ISSUES
Biological Resources	Potential for adverse effects to rare, threatened, and endangered and special-status species. Considerable concern for Riparian Conservation Areas and the spread of noxious weeds throughout Angeles National Forest lands. Impacts to avian species and increased raptor predation of sensitive species due to the use of lattice towers. Potential for loss of habitat.
Cultural Resources	Impacts to historical, cultural and archaeological resources in the Project area.
Earth Resources	Adverse impacts to soils throughout the proposed Project area, including sedimentary rocks and fossils.
Water Resources	Impacts to drainages, wetlands, Waters of the State, Waters of the U.S., and blue-line streams.
Land Use	Acquisition of private property, eminent domain, and the expansion of transmission line right-of-way and easements. Decreased property values with additional transmission lines. Conflicts with land use and recreation policies of the Forest Plan.
Fire Management	Impacts to fire suppression efforts.
Recreation	Impacts to recreational facilities and trails. Impacts to the quality of the Antelope Valley California Poppy Reserve, Pacific Crest Trail, Wild and Scenic River Corridor, and wilderness.
Visual Resource	Adverse affects to visual resources of the area, especially those important to the character of the ridgelines, as well as from homes, communities, businesses, trails, State Parks, Angeles National Forest, BLM-managed lands, and other public lands.

4.3 FEASIBILITY

CEQA Guidelines (Section 15126.6(f)(1)) state that a number of factors may be considered in determining which alternatives are feasible. These include, but are not limited to, the following:

- Suitability;
- economic viability;

availability of infrastructure;
general plan consistency;
other plans or regulatory limitations;
jurisdictional boundaries; and
whether the proponent can reasonably acquire, control or otherwise have access to the alternative site (or the site is already owned by the proponent).

According to NEPA's Forty Most Asked Questions No.2a, reasonable alternatives include those that are practical or feasible from a technical and economic standpoint and using common sense, rather than simply desirable from the standpoint of the applicant.

4.4 RECOMMENDATION FOR ANALYSIS IN EIS/EIR

A number of alternatives to the proposed Project were identified, and some of these alternatives did not meet the purpose and need for the Project or provide the potential to avoid or minimize adverse environmental effects, or were considered infeasible through additional study and evaluation. A rationale for each alternative's ability to meet the criteria is provided in the following section, along with a recommendation for elimination or retention of the alternative for full analysis in the EIS/EIR.

5 ALTERNATIVES CONSIDERED AND ELIMINATED FROM DETAILED ANALYSIS

NEPA and CEQA require an EIS/EIR to consider a reasonable range of alternatives to the project that would feasibly attain most of the basic objectives of the project, but avoid or substantially lessen any adverse effects of the proposed project. The scoping process, informational public meetings, and preliminary studies identified fourteen alternatives for the proposed Project.

To determine which alternatives would be considered for full analysis in the EIS/EIR, the alternatives were categorized as system, design, or routing alternatives. A brief description of each alternative is provided, the alternative's ability to meet the screening criteria described in Section 4.0 is disclosed, and a rationale for the recommendation to retain or eliminate an alternative from full analysis in the EIS/EIR is provided.

5.1 SYSTEM ALTERNATIVES

5.1.1 Energy Conservation and Demand-Side Management

Alternative Description

This alternative would involve increased energy conservation and demand-side management within the LADWP service area instead of interconnecting to generation from the Tehachapi Mountains and Mojave Desert.

Energy conservation and demand-side management are currently an integral part of LADWP's strategy to meet customer needs. Energy-saving and efficiency efforts include the Consumer Rebate Program, the Refrigerator Exchange and Retire Program, Low Income Refrigerator Exchange Program, Trees for a Green LA, the Small Business Direct Install Program, and the Compact Fluorescent Light Bulb Delivery Program. This alternative would continue these existing programs and invest in expanding them.

Meeting the Purpose and Need

This alternative would generally reduce the need for additional power and could thus reduce greenhouse gas emissions, but would not assist in meeting the Renewable Portfolio Standard Goals or allow for the interconnection and expansion of LADWP's renewable energy in the Tehachapi Mountains and Mojave Desert. Nor would it increase system reliability and flexibility in the utilization of renewable resources or

enable the delivery of renewable energy. In 2007, Los Angeles Mayor Antonio Villaraigosa committed that power contracts from coal-fired plants would not be renewed and LADWP would secure other generation sources. Energy conservation and demand-side management alone will not meet the electrical demand.

Potential to Avoid and Minimize Environmental Effects

Energy conservation and demand-side management would decrease energy demand which, if other contributing factors such as population growth were static, given a static demand would decrease the need for power generation and transmission. Decreased power generation could lead to avoiding environmental impacts associated with power generation from existing facilities (e.g., to Air Quality, Water Resources, Hazards and Hazardous Materials) and avoid impacts associated with the development of new power facilities and transmission (e.g., to Biological Resources, Cultural Resources, Earth Resources, Water Resources, Land Use, Recreation, Visual Resources). This alternative would eliminate nearly all of the significant issues identified by not constructing, operating, or maintaining the BRRTP. However, it is assumed that if Barren Ridge were not built, other transmission projects with similar impacts may be proposed to meet the electrical demands, RPS goals, and greenhouse gas emission reductions.

Feasibility

Since 2000, LADWP has successfully implemented a number of conservation and energy efficiency programs and reduced peak load by approximately 176 MW. While energy conservation and demand-side management is feasible and may reduce electricity demand, the reductions alone are not sufficient to meet current and future electrical demands or RPS goals.

Recommendation for Analysis in EIS/EIR

ELIMINATION. Energy conservation and demand-side management alone will not meet the electrical energy demands, meet RPS goals, or achieve greenhouse gas emission reduction goals. While it could lead to avoidance and minimization of environmental effects from the construction of a new transmission line, it is not feasible to rely solely on this strategy to meet the electrical energy demands and meet RPS and greenhouse gas reduction goals.

5.1.2 Distributed Generation and In-basin Generation Expansion

Alternative Description

This alternative would involve the increased expansion of distributed generation, including solar facilities and fuel cells within the LADWP service area, and the development of additional large scale in-basin generation instead of interconnecting to generation from the Tehachapi Mountains and Mojave Desert. Distributed generation entails the installation of new small electrical generating plants, typically less than 20 megawatts, at or near electric load centers. New in-basin generation could include facilities such as new gas, biogas, small hydro-electric, solar, and geothermal power plants.

Increased distributed generation and small solar generation is already an integral part of LADWP's approach to meeting energy needs and RPS goals. Some of the programs that LADWP has implemented are the Distributed Generation Program, Customer Generation Rebate Program, and Residential Solar Initiative Program. In addition, LADWP has also recently upgraded a number of their generating stations to make them more efficient.

Meeting the Purpose and Need

To the extent that the new generation would be renewable in nature, this alternative could assist LADWP to meet RPS goals and reduce greenhouse gas emissions. The existing programs currently being implemented by LADWP have already been included within its projected RPS goals. These programs and

projects alone, however, will not meet the long-term RPS goals. It would not allow interconnection and expansion of LADWP's renewable energy in the Tehachapi Mountains and Mojave Desert, or delivery of renewable resources. System reliability and flexibility of the existing high-voltage transmission system would not increase. It would, however, minimize effects to ANF and BLM managed lands.

Potential to Avoid and Minimize Environmental Effects

New sources of in-basin generation would avoid impacts associated with the proposed Project, but would also result in site-specific impacts associated with the construction and installation of new distributed solar facilities, gas, hydro-electric, solar and/or geothermal power plants, including impacts to air quality, biological resources, cultural resources, land use, noise, traffic, transportation, socioeconomics, and visual resources. Electrical transmission upgrades would also be required to integrate these new resources into the transmission system, and although their locations and specific impacts are unknown, it is assumed that impacts of additional transmission and generation projects would be similar enough to BR RTP that they may, on balance, cancel any environmental benefits of this alternative.

Feasibility

Building distributed generation and expansion of in-basin generation resources is feasible.

Recommendation for Analysis in EIS/EIR

ELIMINATION. LADWP has implemented a number of distributed generation and in-basin generation programs. This alternative alone will not meet the electrical energy demands, meet RPS goals, achieve greenhouse gas emission reduction, or increase overall system reliability, nor would it provide delivery of renewable energy at a level and within a timeframe necessary to meet purpose and need.

5.1.3 Solar Alternative

Alternative Description

The solar alternative would involve the increased use of solar energy. LADWP has a Solar Energy Plan that consists of the following five programs that are mainly in the Los Angeles Basin:

- (1) The Solar Incentive Program (SIP), which encourages LADWP ratepayers to install solar panels on their roofs. The goal is to install 130 MW of customer-owned solar systems by 2020;
- (2) Feed-in Tariff (FiT) would allow a solar developer in the City of Los Angeles to sell wholesale power directly to LADWP through a long-term contract between the private seller and LADWP. The goal is to obtain 150 MW of solar power from developers by 2016;
- (3) The new SunShares Program would provide residential customers the opportunity to invest in an LADWP solar power plant. The goal is to obtain approximately 100 MW of solar power from a SunShares power plant by 2020;
- (4) The Utility Built (LADWP-owned Solar Projects) program would involve the installation of solar systems on LADWP-owned rooftops, reservoirs and parking lots. LADWP has a goal of obtaining 400 MW of solar power from City-owned systems by 2014; and
- (5) The Large-Scale Solar Program would involve LADWP procuring large-scale power purchase agreements from third-party solar developers. LADWP has a goal of obtaining 500 MW of utility-scale solar power from developers in the Mojave Desert by 2020.

The Solar Incentive Program, SunShares, and Feed-in-Tariff programs would be within the Los Angeles Basin. The Utility Built program would be mostly in-basin as well. The Large-Scale Solar Program (or power purchase agreements) would largely be out-of-basin in order to access solar resources in the Mojave Desert and require transmission to the City of Los Angeles.

Meeting the Purpose and Need

The increased utilization of solar energy would provide LADWP with approximately 10% of its RPS goals and would reduce greenhouse gas emissions. However, the solar programs alone would not meet LADWP's RPS goal of 35% by 2020. System reliability and flexibility of the existing high-voltage transmission system would not increase. Without the construction of a new 230 kV transmission line from Barren Ridge to Haskell Canyon, the delivery of solar energy from the Mojave Desert area would be limited.

Potential to Avoid and Minimize Environmental Effects

In-basin solar generation would avoid the need to construct a new 230 kV transmission line and reconductor an existing transmission line. However, the Large-Scale Solar Program and Solar Incentive Program may result in site-specific impacts associated with the construction and installation of new solar facilities and require electrical transmission upgrades to integrate these new resources into LADWP's electrical system.

Feasibility

Accessing solar energy is feasible, as evidenced by the solar program proposals by LADWP listed above.

Recommendation for Analysis in EIS/EIR

ELIMINATION. LADWP currently has a Solar Energy Plan that proposes a number of solar programs that would provide approximately 10% of LADWP's electrical demand. Although this alternative may avoid or minimize impacts of the proposed Project, this alternative alone would not meet the electrical energy demands or RPS goals. Additional transmission capacity may also be required to transfer solar energy from the Large-Scale Solar Program in the Mojave Desert area to the Los Angeles Basin.

5.1.4 Reconductor Existing Transmission Line (No New Transmission Line)

Alternative Description

To minimize impacts of a new transmission line and right-of-way expansion, LADWP considered an alternative that would upgrade the existing electrical system. This alternative would have all the same project components as the Proposed Project (reconductoring the existing BR-RIN transmission line, addition of a new 230 kV circuit on existing structures, construction of Haskell Canyon Switching Station, and expansion of Barren Ridge Switching Station), except the construction of a new double-circuit 230 kV transmission line from the Barren Ridge Switching Station to the proposed Haskell Switching Station.

The BR-RIN's existing conductors would be replaced with a 1,433.6 kcmil "Merrimack" ACSS/TW/HS (aluminum conductor steel supported/trapezoidal wires/high strength). A new circuit, consisting of a bundled 715.5 kcmil "Starling" ACSS/AW conductor, would be placed onto existing structures from the Castaic Power Plant to the proposed Haskell Canyon Switching Station.

Reconductoring of the existing BR-RIN transmission line would take approximately one year and would require the transmission line to be taken out of service. However, north of Barren Ridge Switching Station, seven LADWP hydroelectric power plants along the Los Angeles Aqueduct transmit their electrical energy output onto the BR-RIN transmission line. The power plants do not have by-pass

capabilities and are required to generate energy to avoid deterioration to the electrical turbines. Therefore, since there is no means for bypassing the power plants or halting the electrical output, a temporary transmission line would be required in order to reconnector the existing BR-RIN transmission line between Barren Ridge and Haskell Canyon. This temporary transmission line, sometimes referred to as a shoe-fly, would typically consist of temporary wood poles used to carry the existing energized conductors along the entire stretch of the BR-RIN corridor. Construction of the temporary shoe-fly would require approximately 80 – 100 feet of temporary right-of-way adjacent to the existing BR-RIN line. The construction would require surveying of right-of-way, rehabilitation of existing access and spur roads, clearing of right-of-way where necessary, installation of temporary poles, conductor relocation and installation, and cleanup.

To the maximum extent possible, the same access and spur roads utilized for the construction of a temporary shoe-fly would be also be utilized for the reconductoring of the BR-RIN. To carry the additional weight of the new heavier conductor, some existing BR-RIN towers may require modification, replacement, or foundation reinforcement. The existing conductor would be used as a pulling line for the new conductor. Once the transmission line is reconnected and in service, the temporary shoe-fly would be removed.

The addition of a new circuit from the Castaic Power Plant to the proposed Haskell Canyon Switching Station would require surveying of right-of-way, rehabilitation of existing access and spur roads, clearing of right-of-way where necessary, installation of conductor, and cleanup. All work would occur within the existing right-of-way.

The new proposed Haskell Canyon Switching Station and expansion of the Barren Ridge Switching Station would be located on LADWP-owned land. The construction of a new switching station and expansion of the existing switching station would require the following activities: preconstruction surveys, clearing and grading of access roads, site grading and drainage development, installation of concrete foundations and steel support structures, installation of below- and above-ground electrical conduits for equipment power and control, installation of below- and above-grade grounding conductors, installation of electrical equipment, and installation of control and relay houses.

Meeting the Purpose and Need

The existing BR-RIN transfers approximately 110 MW of hydropower. In the mountains northeast of Tehachapi, LADWP has two wind projects (Pine Tree, which has recently completed construction, and the proposed Pine Canyon) that would total 270 MW. The power generated from these wind projects will be transferred through the BR-RIN transmission line, thus creating a total generation transfer of 380 MW. Even with the increased capacity from reconductoring, the upgraded transmission line would not be sufficient to deliver future renewable energy from the Tehachapi Mountains and Mojave Desert areas.

Without the construction of a new double-circuit 230 kV transmission line, the amount of renewable energy transferred from the Tehachapi Mountains and Mojave Desert areas to the Los Angeles basin would be very limited. Also, any disruption of service along the reconnected transmission line would cease transmission of renewable energy from the Project Area. The existing Pacific Direct Current Intertie is adjacent to the BR-RIN; however, it operates as a bipolar direct current 500 kV transmission line and it is very difficult for renewable resources to tap into and interconnect.

Limiting LADWP's ability transfer renewable energy would also limit its ability to reduce greenhouse gas emissions, meet RPS goals, ensure reliability and flexibility in the utilization of renewable energy sources, and conduct interconnections and expansion of renewable energy sources. Elimination of the new transmission line would minimize long-term permanent impacts to federal lands managed by the

BLM and USFS. However, this alternative would not maximize the accommodation of future utility needs, nor would it increase system reliability along the Barren Ridge to Haskell Canyon utility corridor.

Potential to Avoid and Minimize Environmental Effects

The reconductoring of the existing BR-RIN and addition of a new circuit between Castaic and Haskell Canyon would maximize the use of existing right-of-way and minimize the permanent acquisition of private property. It would also minimize potential permanent impacts to lands federally managed by the BLM and USFS. The construction of a temporary shoe-fly would likely have less impact than the addition of a new double-circuit transmission line, due to its temporary nature and because the footprint of the shoe-fly is smaller than that of a double-circuit tower. However, the removal of the temporary towers would also contribute to temporary disturbance. It is assumed that if the new Barren Ridge-Haskell Canyon double-circuit transmission line were not built, other transmission projects with similar impacts to the proposed Project would be proposed by LADWP to meet the future electrical demands, RPS goals, and greenhouse gas emission reductions goals. Therefore, environmental impacts may not be minimized without the construction of a new transmission line.

Feasibility

This alternative is feasible.

Recommendation for Analysis in EIS/EIR

ELIMINATION. Without a new double-circuit 230 kV transmission line, the transfer capacity of the utility corridor from Barren Ridge to the proposed Haskell Canyon Switching Station would be constrained, thereby limiting LADWP's ability to deliver renewable energy, meet future electrical demands, RPS goals, greenhouse gas reductions goals, and interconnection and expansion of renewable energy in the Tehachapi Mountains and Mojave Desert areas. The permanent impacts of this alternative would be less than that of the proposed Project; however, the construction of a temporary shoe-fly and need for additional transmission capacity would not minimize or avoid impacts to environmental resources.

5.1.5 New 230 kV Transmission Line (No Reconductoring of BR-RIN)

Alternative Description

Another variation of the proposed Project would be the construction of four of the five proposed Project components. This alternative would eliminate the reconductoring of the existing BR-RIN transmission line. This alternative would include construction of a new 230 kV double-circuit transmission line from Barren Ridge Switching Station to the proposed Haskell Canyon Switching Station, addition of a new 230 kV circuit on existing structures from the Castaic Power Plant to the proposed Haskell Canyon Switching Station, construction of the Haskell Canyon Switching Station, and expansion of the Barren Ridge Switching Station.

Construction of the new transmission line would require a 200 foot right-of-way and involve the following general sequence of events: surveying the centerline; identifying and constructing access roads; clearing right-of-way and tower sites (including construction yards and batch plants); installing foundations; assembling and installing the towers; clearing, pulling, tensioning, and splicing sites; installing ground wires and conductors; installing counterpoise/ground rods; and cleanup and site reclamation.

The addition of a new circuit between Castaic and Haskell Canyon would require surveying of right-of-way, rehabilitation of existing access and spur roads, clearing of right-of-way, installation of conductors, and cleanup. All work would occur within existing right-of-way.

The construction of the new proposed Haskell Canyon Switching Station and expansion of the existing Barren Ridge Switching Station would require the following activities: preconstruction surveys, clearing and grading of access roads, site grading and drainage development, installation of concrete foundations and steel support structures, installation of below- and above-ground electrical conduits for equipment power and control, installation of below- and above-grade grounding conductors, installation of electrical equipment, and installation of control and relay houses.

Meeting the Purpose and Need

The construction of a new double-circuit transmission line, installation of a new circuit, construction of a new switching station, and expansion of the existing switching station would increase transmission of renewable energy from the Tehachapi Mountains and Mojave Desert areas to the Los Angeles Basin. However, without reconductoring the existing BR-RIN, LADWP would be limited by its ability to transfer renewable energy to the Los Angeles Basin and meet projected future electrical demands. Removing the reconductoring component would also limit LADWP's ability to meet RPS and greenhouse gas reduction goals.

Utility companies must provide a reliable system and therefore must plan for disruptions in service. In the event that a transmission line was out of service, referred to as an N-1 situation, the energy would be transferred to adjacent transmission lines. Generally, planning for an N-1 situation takes into account the loss of the largest line within a corridor. Therefore, the lowest-capacity transmission line within a corridor would become the limiting factor. Reconductoring the existing BR-RIN transmission line would reduce the potential of the two new Barren Ridge-Haskell Canyon circuits' transfer capacity significantly in order to avoid the overloading of the BR-RIN transmission line in an N-1 scenario. This alternative would also reduce the potential transmission capacity of the entire corridor between Barren Ridge and Haskell Canyon.

The elimination of the reconductoring component of the proposed Project would minimize impacts to federal lands managed by the BLM and USFS. However, it may not meet LADWP's future electrical demands related to meeting RPS goals.

Potential to Avoid and Minimize Environmental Effects

Removal of the reconductoring component of the Project would minimize environmental impacts to air quality, biological resources, cultural resources, traffic and transportation, and water resources. It would also reduce cumulative impacts of the proposed Project.

Feasibility

Construction of the proposed project, minus reconductoring of the existing BR-RIN is feasible to construct.

Recommendation for Analysis in EIS/EIR

ELIMINATION. This alternative would allow LADWP to access renewable resources in the Tehachapi Mountains and Mojave Desert areas. By removing the reconductoring portion of the proposed Project, it would minimize the potential for impacts to environmental resources and reduce cumulative impacts of the proposed Project. However, it would limit LADWP's ability to transfer renewable energy, meet future electrical energy demands, meet RPS goals, and reduce greenhouse gas emissions.

5.2 DESIGN ALTERNATIVES

5.2.1 Direct Current Transmission

Alternative Description

This alternative would utilize direct current (DC) for power transmission rather than alternating current (AC). DC conductors can transfer approximately twice the power than the proposed AC conductors and may also allow power transmission between unsynchronized AC distribution systems. This increases system stability by preventing cascading failures from propagating within a wider power transmission grid. The magnitude and direction of power flow through a DC transmission line can be directly commanded, and changed as needed to support the AC networks at either end of the DC link.

LADWP's existing transmission network contains both AC and DC transmission. Parallel to the BR-RIN is the existing ± 500 kV Pacific Direct Current Intertie (PDCI) that utilizes direct current technology. The PDCI is operating at capacity and cannot accommodate additional energy. In order to fully incorporate a new DC line into the existing AC system, conversion facilities would have to be built at the terminal ends (Barren Ridge Switching Station and the proposed Haskell Canyon Switching Station). The converter stations would be approximately 30 acres and include an inverter, three-phase alternating current switchgear, transformers, capacitors or synchronous condensers, filters for harmonics, and direct current switchgear.

The DC conductors have the ability to transfer a greater capacity than AC conductors. Therefore, in this alternative a new DC line would replace the proposed double-circuit 230 kV transmission line and existing BR-RIN. The DC towers would require similar right-of-way, tower heights, footprints, and tower-to-tower spans as that of the proposed 230 kV transmission line. The main difference would be that the DC system would also require two-phase conductors versus the three-phase conductors of an AC system.

The construction sequence of a DC transmission line would be very similar to that of a new AC transmission line. Once the new DC line was constructed, the existing BR-RIN 230 kV transmission line would be removed.

DC Technology

Technological advances within the last decade have made High Voltage Direct Current (HVDC) transmission more economically feasible and advantageous. Conventional HVDC utilizes Current-Source Converters (CSC) to rectify or invert power from AC to DC and back to AC. New technology uses what is known as Voltage-Source Converters (VSC). Typically, using VSC technology results in a much reduced converter station size when compared to conventional CSC systems. This generation technology is referred to as HVDC Light or HVDC Plus. To date, HVDC Light or HVDC Plus technology has seen limited application for power transfer levels up to about 1,000 MW and 150 kV DC.

The conventional CSC stations required at each end of the HVDC line would house the HVDC equipment in large buildings with open air AC line terminal equipment. The converter stations are estimated to encompass an area approximately 2,000 feet by 1,200 feet with structures and buildings 75 to 90 feet tall. Typical High Voltage Alternating Current (HVAC) stations would occupy approximately 500 feet by 500 feet for a double-circuit 230 kV line. Due to greater long-term impacts associated with the larger HVDC converter stations (e.g., visually more obtrusive and greater permanent land disturbance), HVAC would be the preferred technology for this Project because it requires smaller transition stations.

Meeting the Purpose and Need

As this alternative would involve the construction of a transmission line that would convey the same amount of power as the proposed action, it would meet much of the action's basic purpose and need to

deliver renewable energy, meet electrical energy demands, and increase system reliability and flexibility. However, due to the high cost of interconnections and the need for converter stations at Barren Ridge and Haskell Canyon, constructing a DC system could potentially limit connection to future wind and solar facilities that may be developed in the area. The ability to transmit a greater amount of power on one transmission line versus two transmission lines in the proposed action would minimize impacts to federal lands managed by the BLM and USFS.

Potential to Avoid and Minimize Environmental Effects

The primary construction impacts for a transmission line are very similar for overhead AC and DC transmission lines. However, the DC conductor has the ability to transfer a greater amount of power than the proposed AC conductors and therefore could transmit the power on one transmission line, rather than the proposed two AC transmission lines (new double-circuit and existing BR-RIN). The DC transmission line would have a smaller footprint and require less right-of-way than the proposed Project and, therefore, would minimize long-term impacts to environmental resources, especially land use, visual resources, and air quality. However, impacts associated with the removal of the existing BR-RIN transmission line would be similar to that of reconductoring this same transmission line as proposed by the proposed action.

The terminal converter stations required for a DC transmission line would be approximately 30 acres each, which is significantly larger than the proposed new Haskell Canyon Switching Station and expansion of the existing Barren Ridge Switching Station (approximately five acres each). The construction of the converter stations would increase the potential for impacts to air quality, land use, biological resources, cultural resources, earth resources, water resources, and visual resources.

Feasibility

DC transmission systems generally are considered less expensive and suffer lower electrical losses than AC systems for very long distance transmission lines (typically 400 miles or more). However, the considerably higher cost of DC conversion equipment (terminal stations that convert DC to AC, and vice versa) and decreased efficiency over shorter distances compared to an AC system make AC transmission generally preferable. LADWP is proposing a new 60 mile 230 kV transmission line and DC transmission is rarely suitable for projects of this voltage and length.

DC transmission systems are typically point-to-point transmission systems, and “tapping” DC systems with interconnections of solar and wind generation within the Mojave and Tehachapi areas to create a multi-terminal DC system is technically and economically not feasible; furthermore, tapping into the middle of such a line is generally considered non-viable. AC systems allow for more flexibility with these interconnections of renewable power sources.

AC is preferable because it has a shorter construction schedule and substantially lower costs, and would allow more flexibility for future connections to other systems. The costs to construct the converter stations for a new DC line would be significantly more than the proposed Project, and would also take significantly more time to construct than a typical AC switching station. Without clearly demonstrated benefits, LADWP would be unable to justify the considerably greater costs associated with this alternative.

Recommendation for Analysis in EIS/EIR

ELIMINATION. The DC system would meet the purpose and need of the Project to transfer renewable energy, and assist LADWP in meeting RPS goals, greenhouse gas reduction goals, and electrical energy demands. Although this alternative would minimize the number of transmission line towers and reduce the need for right-of-way, converter stations would be required that may increase the potential for impacts to air quality, land use, biological resources, earth resources, water resources, and visual resources. The

DC system is a point-to-point system, and tapping into it to create a multi-terminal system is technically and economically not feasible and therefore may limit the future interconnections into the system and the amount of renewable energy available for LADWP in meeting RPS goals. The converter stations also come at considerably higher costs without clear benefits as compared to an AC system, and therefore make this alternative infeasible for LADWP.

5.2.2 Quad-Circuit Towers

Alternative Description

LADWP considered the use of quad-circuit towers along the existing BR-RIN corridor instead of the proposed double-circuit tower and existing BR-RIN towers. The towers would be constructed adjacent to the existing transmission towers within new right-of-way and would require a 50 foot by 40 foot tower footprint, and be approximately 120 feet in height, with tower-to-tower spans of 1,000 ft (which is very similar to that of the proposed double-circuit towers). The reconductored BR-RIN circuit and two new proposed circuits would be combined onto the same quad-circuit towers. Once the quad-circuit towers were constructed with the two new circuits, the new BR-RIN conductor would be transferred onto the new quad-circuit towers, and the existing BR-RIN towers would be removed. One position on the new towers would remain vacant for a possible future circuit. The quad-circuit towers would reduce the number of towers and reduce right-of-way needs by approximately 65 feet in comparison to the Proposed Action, which would require 200 feet of new right-of-way.

LADWP does not have existing 230 kV transmission lines along Segments C, D, E, F, H, and I, and therefore the use of quad-circuit towers would not be considered along these corridors. The new quad-circuit towers would be constructed adjacent to the existing ± 500 kV PDCI and require an additional 135 foot right-of-way.

A portion of the BR-RIN conductors, from Power Plant #2 to Haskell Canyon, are hung on existing quad-circuit towers. To accommodate the weight of the proposed new Barren Ridge to Haskell Canyon transmission line (two circuits) and the reconductored BR-RIN, the existing towers would need to be raised approximately 20 feet. To avoid an interruption of service along the BR-RIN, a temporary shoe-fly would need to be constructed, which would require a temporary 80-100 foot right-of-way.

After the construction of the new quad-circuit towers, the existing BR-RIN conductor would be transferred onto the new quad-circuit towers and the shoe-fly and existing BR-RIN tower would be removed.

Meeting the Purpose and Need

The reduction of transmission line towers and right-of-way expansion would meet BLM's and Forest Service's purposes of minimizing the effects of utility corridors on federally managed lands. However, LADWP is interconnected into the Western Grid and follows the Western Electricity Coordinating Council (WECC) and the North American Electric Reliability Corporation (NERC) standards for system reliability criteria. In the event of a structure loss, the placement of multiple circuits on single structures would lessen reliability by increasing potential for loss of multiple circuits. This alternative would include all three circuits on a single structure for the entire length of the transmission line from Barren Ridge to Haskell Canyon. WECC regulations would limit the transfer capacity on the towers and, therefore, a limited amount of renewable energy would be transmitted in comparison to the proposed action. This would limit LADWP's greenhouse gas emission reduction, along with the ability to meet RPS goals and electrical demands.

Potential to Avoid and Minimize Environmental Effects

Construction of a new multi-circuit tower and the removal of the existing BR-RIN would have similar temporary impacts to biological resources, recreation, and visual resources. However, the use of multi-circuit towers would minimize the right-of-way needs and eliminate existing structures by combining circuits onto one tower and, therefore, would minimize permanent impacts to land use and visual resources. The elimination of existing towers and placement of conductors from both existing and new lines onto single structures would minimize permanent impacts to visual resources.

Feasibility

Construction of multi-circuit towers is feasible.

Recommendation for Analysis in EIS/EIR

ELIMINATION. Although this alternative would require less permanent right-of-way and minimize permanent impacts to visual resources and to Forest Service- and BLM-managed lands, it would increase land use impacts. The multi-circuit structures would not meet the purpose and need to increase LADWP's system reliability and flexibility, increase delivery of renewable energy, or meet future electrical demands. It would also limit LADWP's ability to reduce greenhouse gas emissions, meet RPS goals, and allow interconnection and expansion of renewable energy resources. Greater temporary impacts would result to construct the large quad-circuit towers and remove the existing BR-RIN.

5.2.3 Alternative Voltages

Alternative Description

The voltage of a transmission line determines the line's ability to transmit electricity. The resistive power loss of a transmission line can be reduced by increasing the operating voltage of a transmission line. Long-distance transmission is most economically served at high voltages. In general, as the voltage increases, the height of the supporting towers, footprint of the towers, size of the insulators, distance between conductors on a towers, and right-of-way widths increase.

A single-circuit 500 kV transmission line tower structure would be an average height of 150 feet, and require a 50 foot square footprint and approximately 200 foot wide right-of-way. The ability to transfer a greater capacity would allow LADWP to transfer energy onto one tower instead of reconductoring the BR-RIN and building a new 230 kV transmission line. The existing BR-RIN would be removed upon completion of the new 500 kV transmission line.

The existing Barren Ridge and proposed Haskell Canyon Switching Stations would need to be converted into substations and would require the incorporation of transformers and a 500 kV switchyard (approximately 600 feet by 600 feet). This would increase the size of the Barren Ridge and Haskell Canyon 500/230 kV Substations to be approximately 1,000 feet by 600 feet each.

To avoid additional impacts, the two sets of existing 230 kV transmission line towers located in the Castaic Transmission Corridor would remain and would not be upgraded to a 500 kV transmission line. Similar to the proposed Project, this alternative would also include the addition of a new circuit on existing structures.

The 500 kV double-circuit transmission line has the potential to increase environmental impacts and deliver a capacity well beyond the needs of LADWP, and is therefore not considered. Lower voltage lines, such as double-circuit 115 kV or 69 kV transmission lines, have lower transfer capacities; they do not have the power transfer capability as the proposed Project and are therefore not considered for the proposed Project.

Meeting the Purpose and Need

The single-circuit 500 kV transmission line is capable of delivering the capacity required for the BR RTP and would meet the purpose and need of the Project. It would reduce greenhouse gas emissions, meet RPS goals, enable delivery of renewable energy, increase reliability and flexibility in the utilization of renewable energy sources, and increase the use of existing energy corridors.

Potential to Avoid and Minimize Environmental Effects

The 500 kV transmission line has the potential to minimize visual and land use impacts, because it has the ability to transfer a greater amount of power on one transmission line instead of two transmission lines in the proposed Project (new 230 kV double-circuit transmission line and reconductored BR-RIN). Although the towers would be slightly taller and have a larger footprint, this alternative would require fewer towers than the proposed Project.

However, the conversion of the switching stations into 500/230 kV substations would more than double the proposed size of the stations and increase the potential for impacts to air resources, biological resources, cultural resources, earth resources, land use, water resources, and visual resources.

Feasibility

LADWP facilities within the Project area, including the Castaic Power Plant, currently operate at 230 kV. Utilization of an alternative voltage would require significant upgrades, expansion, and modifications to the existing Barren Ridge Switching Station. The proposed Haskell Canyon Switching Station would instead become a significantly larger substation. The feasibility of constructing such a large substation within Haskell Canyon, or in close proximity, would be very challenging. LADWP estimates upgrading of the substations would add significant cost and time to construct.

Recommendation for Analysis in EIS/EIR

ELIMINATION. The use of an alternative single-circuit 500 kV transmission line would meet the purpose and need of the Project to transfer renewable energy, and assist LADWP in meeting RPS, greenhouse gas reduction goals, and electrical energy demands. However, it may not be feasible to construct a 500/230 kV substation within Haskell Canyon. The increased footprint of the substations also has the potential to increase environmental impacts.

5.2.4 Underground Transmission

Alternative Description

This alternative would use existing technology to install the transmission line underground, instead of conventional construction using steel towers and overhead conductors. Underground transmission systems in the United States are generally used in urban areas for lower-voltage distribution lines. High voltage (115 kV and above), short distance, underground installations have been constructed where overhead lines were not feasible (e.g., in the vicinity of airports, urban centers).

The construction of underground transmission lines requires grading and clearing of trees and vegetation along the right-of-way prior to excavation of the entire length of the transmission line. Large areas of disturbance would result from the excavation and associated activities, such as heavy equipment use and soil storage. Underground construction is more difficult and results in greater clearing, grading, and land disturbance than overhead transmission line construction.

The land required for operation and maintenance of underground transmission lines must remain free of secondary surface development or lengthy-rooted trees planted along the line route, and only vegetation that will not cause maintenance problems is permitted above the underground route throughout the life of

the proposed Project. This contributes to a land use similar to that of a secondary road. Also, duct banks, fluid reservoirs, stop joints, and/or retaining vaults are required for certain underground technologies, increasing the need for cleared land and continued all-weather access for operation and maintenance.

The installation of an underground transmission line would require more time than for construction of an equivalent length of overhead line because of the time required for excavating trenches and constructing the duct banks, fluid reservoirs, and/or stop joints, and the limitations on times of the year available for construction, which would be chosen to limit the impacts to the environment.

AC or DC Technology

Similar to overhead lines, underground transmission lines can be installed using AC or DC technology. Underground transmission lines can utilize either High Voltage Alternating Current (HVAC) or High Voltage Direct Current (HVDC). The primary differences between these two technologies are that HVDC would consist of two DC conductor positions, referred to as “poles,” instead of three AC conductor positions, referred to as “phases.” Because HVDC utilizes two poles and HVAC utilizes three phases, HVDC would utilize two-thirds of the cables necessary for a HVAC system; however, HVDC would require AC/DC converter stations at each end of any underground segment (similar to what was described in section 5.2.3).

Technological advances within the last decade have made HVDC transmission more economically feasible and advantageous. Conventional HVDC utilizes Current-Source Converters (CSC) to rectify or invert power from AC to DC and back to AC. New technology uses what is known as Voltage-Source Converters (VSC). Typically, using VSC technology results in a much reduced converter station size when compared to conventional CSC systems. This generation technology is referred to as HVDC Light or HVDC Plus. To date, HVDC Light or HVDC Plus technology has seen limited application for power transfer levels up to about 1,000 MW and 150 kV DC.

The conventional CSC stations required at each end of the HVDC line would house the HVDC equipment in large buildings with open air AC line terminal equipment. The converter stations are estimated to encompass an area approximately 2,000 feet by 1,200 feet with structures and buildings 75 to 90 feet tall. Typical HVAC stations would occupy approximately 500 feet by 500 feet for a double-circuit 230 kV line. Due to greater long-term impacts associated with the larger HVDC converter stations (e.g., visually more obtrusive and greater permanent land disturbance), HVAC would be the preferred technology for this Project because it requires smaller transition stations.

Underground Technologies

High-voltage underground transmission lines have markedly different technological requirements than lower-voltage underground distribution lines. The components of a typical solid dielectric cable consist of a stranded copper or aluminum conductor, conductor shield, solid dielectric insulation, insulation shield, moisture barrier sheath, and a protective jacket. The conductors would be several inches in diameter, depending on voltage. Switch stations are often required on underground transmission systems to control the circuit voltage, depending on length and voltage class.

There are four typical underground technologies for high voltage transmission lines:

1. Self-Contained Fluid-Filled (SCFF)

The self-contained cable system consists of three individual phases, each contained within a hermetically sealed metallic sheath that is typically extruded lead-alloy or aluminum. The cables are insulated with a high-quality taped insulation. Both kraft paper and laminated paper-polypropylene insulations are employed. The fluid pressure necessary to prevent ionization is maintained through a hollow core in the

center of the conductor. The SCFF cable is pressurized with a dielectric liquid at 575 pound-force per square inch gauge (psig) (35-520 kilopascal [kPa]). Commercial installations have pressures as high as 400 psig (2760 kPa) using reinforced sheaths. Small liquid reservoirs are placed along the route.

The presence of the dielectric liquid and reservoirs, plus the complexity of sheath bonding, are disadvantages of the SCFF cable system. SCFF cables may be directly buried, or they may be installed in ducts or in tunnels. An advantage of SCFF insulation cables compared to extruded-dielectric cables is that the insulation is thinner for the same conductor size and voltage class. This allows longer cable lengths on the same reel size and, in some instances, can provide the opportunity to install 230- to 275-kV-class cables into existing five-inch (125-mm) ID ducts.

2. High-Pressure Fluid-Filled (HPFF) Cables

A high-pressure fluid-filled (HPFF) cable system contains a pipe that is pressurized, usually with a dielectric liquid. Pipe-type cables have the three cable phases insulated with tapes of kraft paper or laminated paper polypropylene and installed in a common steel pipe. The three phases making up a line are pulled together into a previously installed coated and cathodically protected steel pipe, with distances commonly 3000 feet (980 m) between splices for 345 kV cables. After the entire line is installed, including splices and terminations, and the pipe welding is completed, the line is evacuated, then filled with a dielectric liquid. The liquid is pressurized to a nominal 200 psig (1380 kPa) using a pressurizing plant that also has a reservoir tank to accept volume changes due to system thermal expansion and contraction, as well as pumps, controls, and alarm systems. The presence of the dielectric liquid and need for a pressurizing plant must be taken into account for the HPFF cable system, but those considerations do not exist with a high-pressure gas-filled cable system.

Pipe-type cables have been the most commonly used transmission cable type in North America through the early twenty-first century for several major reasons:

- The pipe provides rugged protection against third-party damage.

- The system is reliable.

- The pipe can be installed in relatively short street openings, minimizing traffic disruption in crowded urban areas, and it can generally be installed more quickly than a concrete-encased duct bank.

- The dielectric liquid provides several options for cooling to improve the circuit rating.

- The laminated paper-polypropylene (LPP) insulation has a higher electrical strength and lower dielectric losses than kraft paper—its higher power transfer has permitted 345 kV cables to be installed in a nominal 8-inch (20-cm) pipe rather than a nominal 10-inch (25-cm) pipe used for 345 kV kraft paper insulated systems. The smaller pipe has many advantages, including cost, bending radii, trench size, and amount of dielectric liquid. Most newly installed 345 kV HPFF cable is now insulated with LPP, and it is used for many 230 kV and some 138 kV installations.

3. Gas-Insulated Lines (GIL) Transmission Cables

Gas-insulated lines (GIL) have been used in a few applications where high-power capabilities are required, such as in substation ties and through tunnels. The GIL system is inherently simple. The conductor and enclosure are made of aluminum tubing, cast-epoxy-resin spacers hold the conductor in place, and the gas gap insulation is typically SF₆ (sulfur hexafluoride) gas pressurized to 30-90 psig (200-600 kPa) or more recently a mixture of 90% nitrogen and 10% SF₆ at a higher pressure. The cable is supplied in rigid 40- to 60-foot (12- to 18-m) sections. Field joints are made between each section. There is minimal service experience in buried installations. The GIL system is normally installed aboveground or in underground troughs or tunnels. GIL are more costly than other cable types and have not yet been applied to long transmission lines.

Terminations consist of a cast resin insulator interfacing with SF₆-insulated switchgear bus bar or a porcelain shell similar in appearance to a conventional pothead. Internal stress control generally requires only a horn-shaped electrical grading shield in the shell. The same gas that pressurizes the bus also pressurizes the porcelain. Insulators for GIL cables are subject to distortion of the stress distribution through accumulation of space charge and particulate contamination, although manufacturers have developed particle traps to control contaminants. Since SF₆ is considered a greenhouse gas, care must be taken to minimize any leakage from the GIL system, hence the development of the 90% N₂, 10% SF₆ mixture.

4. Solid Dielectric (XLPE) Transmission Cables

Extruded-dielectric cables, also known as solid-dielectric cables, use crosslinked polyethylene (XLPE) insulation. XLPE cables are characterized by very small dielectric losses relative to paper and/or ethylene-propylene rubber cables. These losses are essentially constant up to emergency operating temperatures, in contrast to impregnated paper-insulated cables where dielectric losses can increase substantially at high temperatures.

At transmission voltages, the low dielectric loss of XLPE cables results in important improvements in ampacity and offers an additional safety factor against thermal runaway. Thermal runaway is the condition where a cable temperature increases, causing an increase in electrical losses that further raises the temperature, causing additional losses until the cable overheats and fails. The extruded-dielectric cable's lower capacitance extends the critical line length (the length at which all current-carrying capacity is required to supply charging current) significantly and does not contribute as severely to overvoltage problems on weak transmission systems.

Extruded-dielectric cable installations are commonly used in duct banks, one cable per duct, because direct burial and tunnel installations have not proven feasible in city streets. Extruded-dielectric cables are considered less complicated in terms of installation and accessories than SCFF or pipe-type cables, but the sheath bonding/grounding system can be complex, as with SCFF cables.

XLPE technology is considered to be the preferred technology due to reduced and simplified operational and maintenance requirements. Although all underground construction requires similar techniques and results in similar impacts, the discussion below focuses primarily on the use of XLPE technology, as this would be the most likely technology to be utilized for a 230 kV transmission project like the BRTP.

In addition to the reliability issues associated with the use of newer underground technologies, seismic considerations, slope considerations, and cost are also examined when designing an underground transmission line.

Underground Installation

Underground lines can be installed by direct bury or trenching methods.

Direct Bury

A direct buried cable installation is where the cable is laid into an open trench. The trench is backfilled directly over the cables with native soils or thermal backfill material. Concrete caps are placed over the cables to provide mechanical protection. Direct buried cable installations should only be employed in areas where future excavations are not likely, such as within a fenced boundary, inside electrical substations, or within commercial or industrial private property. Direct buried installations are not practical in locations such as existing road rights-of-way where numerous utilities or service laterals are being crossed, or where future underground utility installations are expected.

Trenching

Trenching to install the underground duct banks would commence after identification of all underground utilities along the proposed underground alignments. Actions to accomplish this would include notifying all applicable utilities via underground service alert to locate and mark existing utilities, and conducting exploratory excavations (potholing) as necessary to verify the location of existing utilities. If required, encroachment permits would be secured for trenching in public streets.

Two trenches, separated by 20 feet, would be excavated for the double-circuit 230 kV underground transmission line. The majority of the underground duct banks would be installed in a 2x2 or 3x3 duct configuration, depending on the electrical loading criteria, using open-cut trenching techniques. A duct bank configuration would generally place the three individual phase cables of the circuit in a pyramid, with two cables on the bottom and one cable stacked on top and separated by spacers. As loading requirements for the circuit increase, additional cables may be necessary, in which case the number would be increased in increments of three.

Trenching would be staged so that open trench lengths would not exceed that required to install the duct banks. A maximum of 300 to 500 feet would be open at one time at any one location, depending on applicable permit requirements. Where needed, open trench sections that are not under active construction would have steel plates placed over them in order to maintain vehicular and pedestrian traffic.

Provisions for emergency vehicle access would be arranged with local jurisdictions in advance of construction activities. Should groundwater be encountered, it would be pumped into a tank for disposal in accordance with Project permits.

Excavated materials not temporarily stored to use for backfill would be hauled offsite to a materials storage yard. Based on the anticipated rate of construction progress (300 to 500 feet open at one time), approximately 400 cubic yards of excavated material would be hauled away per day. Excavated materials would be tested for their suitability as a thermal backfill material in the trench.

Nearly all of the underground cable systems constructed for high-voltage transmission lines would be installed in conduit using open-cut trenching techniques unless site-specific conditions dictate that open-cut trenching cannot be utilized. The trench for the cable/conduit would normally be a minimum of five feet deep and four feet wide along the entire length of the underground sections.

Duct Bank Installation

As the trench for the underground transmission line is excavated, LADWP would begin to install the cable conduit, reinforcement bar, ground wire, and concrete conduit encasement, which collectively comprise the duct bank.

As described above, the duct bank for the 230 kV underground transmission lines would likely measure approximately 3.5 feet by 3.5 feet. The 230 kV lines would require two cables per phase (bundled). Two trenches would be required for the double-circuit 230 kV line, with one circuit per trench. Additionally, ducts for communication cables, which are required for system protection and communication purposes, would be installed in the same duct bank as the transmission cables.

Where the electrical transmission duct bank would cross or run parallel to other substructures that operate at normal soil temperature (gas lines, telephone lines, water mains, storm drains, sewer lines), a minimal radial clearance of 12 inches (for crossing) and 24 inches (for paralleling) would be required, respectively. Ideal clearances would range from two to five feet. Where duct banks cross or run parallel to substructures that operate at temperatures significantly exceeding normal soil temperature (other underground transmission circuits, primary distribution cables, steam lines, heated oil lines, etc.), additional radial clearance may be required. Clearances and depths would meet requirements set forth with Rule 33.4 of CPUC GO-128. Preliminary engineering investigations have not identified any underground utilities that operate at high temperatures.

After the duct bank has been installed in the trench, the next step would be to cover the duct bank with backfill and compact the backfill. Each duct bank would require a minimum cover of 36 inches. Finally, a road base or slurry concrete cap would be installed within the trench, and the disturbed surface would be restored in compliance with the locally issued permits. As sections of the trench are covered and restored, additional sections would then be opened for duct bank installation. This process would continue until all PVC conduits have been installed in the duct bank. Note that at this point, the PVC conduit does not contain the transmission line cable; see below (Cable Pulling, Splicing and Termination) for a description of how the underground transmission line would be installed.

Vault Installation

LADWP would excavate and install pre-formed concrete splice vaults or manholes during trenching for the duct banks. Initially, the vaults would be used to pull cable through the conduits and splice the cables together during construction of the BR RTP. During operation, the vaults would provide access to the underground cables for maintenance, inspections, and repairs. Vaults, with approximate dimensions of 25 feet long by seven to ten feet wide, would be constructed of prefabricated steel-reinforced concrete and designed to withstand the maximum credible earthquake in the area and heavy truck traffic loading. Vaults would occur approximately every 800 to 2000 feet along underground segments.

Installation of each vault would take place over a one-week period. First, the vault pit would be excavated and shored, followed by delivery and installation of the vault. Next, the excavated area would be filled with backfill and compacted. Finally, the excavated area would be restored, as required.

Cable Pulling, Splicing and Termination

Following conduit and vault installation, LADWP would pull cable through the duct banks, splice the cable segments at each vault, and terminate cables at the transition stations (where the line would transition from underground to overhead). To pull the cables through the duct banks, a cable reel would be placed at one end of the conduit segment, and a pulling rig would be placed at the opposite end. The cable from the cable reel would be attached to a rope in the duct bank, and the rope linked to the pulling rig, which would pull the rope and the attached cable through the duct banks. A lubricant would be applied as the cable enters the ducts to decrease friction and facilitate travel through the PVC conduits.

The electric and communication cables for the 230 kV circuits would be pulled through the individual ducts at a rate of two to three segments between vaults per day. After cable pulling is completed, the cables would be spliced, or fused together, at each vault. A splice trailer would be stationed at the vault

manhole opening with a power generator directly behind the trailer. Crews would enter the vault and splice the cables.

During splicing operations, the dryness of the vault must be continuously maintained to ensure that unfinished splices are not contaminated with water or impurities. It is estimated that splicing would take 50 hours per cable. As splicing is completed at a vault, the splicing apparatus (splicing trailer and power generator) would be moved to the next vault location, where splicing would resume.

Termination structures would be used for the solid dielectric cable to allow the transition from underground to overhead line sections or above-ground equipment.

Transition Structure Construction

At each end of an underground segment, the cables would rise out of the ground at transition structures, which accommodate the transition to overhead lines. Transition structures constructed as part of the proposed Project would consist of a tubular pole structure with an anchor-bolted pier foundation for each circuit set of three or six cables, depending on site parameters. The transition structure would support cable terminations, lightning arresters, and dead-end hardware for overhead conductors.

Special Construction Methods (Trenchless Technologies - Horizontal Boring and Directional Drilling)

In concert with the tasks outlined above, special construction methods (horizontal boring and/or directional drilling) may be required in areas where open trench construction is not feasible. These areas would include railroad and trolley tracks, large utility crossings, roads, drainage crossings, and other environmentally sensitive areas. LADWP would secure the necessary permits to conduct these specialized construction activities, such as a special use permit, encroachment permit, helicopter lift plan, explosives permit, etc.

Horizontal Boring

Horizontal boring (jack-and-bore) simultaneously pushes a steel casing through the crossing and removes the spoil inside the casing with a rotating auger. First, boring pits would be excavated at the sending (entrance) and receiving (exit) ends of the bore. The bore equipment is inserted into the bore pit at the sending end, where a 36- to 42-inch steel casing is pushed through the earth, under the crossing.

Depending on soil conditions, water may be used to lubricate the auger during boring operations. Casings would be welded together incrementally and installed at least three to four feet below the crossing, or as required by local permits. Once the casing is in place, the duct banks would be installed using plastic spacers to secure them in place. The steel casings would remain to protect the conduit once it has been installed; however, use of fiber-reinforced mortar pipes may be preferred in areas where technically feasible. The duct banks and associated cables would consist of the same respective materials and strung by employing a similar method as those installed on the remainder of the underground portions of the BR RTP.

Directional Drilling

Directional drilling uses a jet bit that can be steered to cut through the earth, creating a small pilot hole. A drill rig and control booth would be set up on one side of the directional drill to facilitate drilling operations. A small containment pit would be excavated around the drill stem to contain any drilling fluids used during the drilling process. Once the jet bit has reached the opposite side of the crossing, a reamer along with the casing (if determined for use by final engineering) would be attached to the auger and pulled back through the pilot hole to widen it. Multiple reamers of increasing diameters would be used to incrementally increase the size of the hole to the diameter necessary to install the conduit casings.

Meeting the Purpose and Need

This alternative would convey the same amount of power as the proposed action, and would meet much of the action's basic purpose and need. It would enable the delivery of renewable resources, reduce greenhouse gas emissions, assist LADWP in meeting its RPS goals, meet electrical energy demands, allow for interconnection and expansion of renewable energy in the Tehachapi Mountains and Mojave Desert areas, and maximize the accommodation of future utility needs. However, effects to ANF and BLM managed lands would not be minimized.

Potential to Avoid and Minimize Environmental Effects

During construction, the environmental impacts of an underground transmission line would be similar to those for major pipeline construction. Potentially greater adverse environmental impacts could be expected because the entire right-of-way would be disturbed instead of disturbance only at tower and support locations along the alignment. Overhead construction has the flexibility to span sensitive features; construction typically would result only in disturbances at individual tower sites and at the ancillary facilities associated with access to the right-of-way. For underground installation in undeveloped areas, the right-of-way would be cleared of all trees, brush, and ground cover in order to establish the transmission line alignment and to permit construction.

Similar to overhead transmission line construction, the installation of underground transmission lines would require permitting, working around traffic and other surface activity that would include storm water control, trenching, laying cable, and avoiding underground utilities. However, the native soils, particularly in the desert, generally possess inferior thermal properties, partly due to inadequate soil moisture levels, which would allow the dissipation of heat away from the cables. The inability to dissipate heat in turn de-rates the cable circuit. It is reasonable to assume that large amounts of more thermally favorable soil or backfill would need to be imported for the Project. Underground construction may require up to five times longer than for overhead transmission lines, creating greater impacts to transportation and traffic.

The required excavation for underground transmission lines would have substantially greater impacts to soils and archaeological, cultural, and biological resources. Turns and bends to the underground transmission line would be very limited and constrained. The permanent placement of an underground line could affect sensitive habitats, such as wetlands and riparian conservation areas, and cultural sites. The potential for the spread of invasive plants, including noxious weeds, would increase. Groundwater flow could also be affected by the presence of an underground trench. Fertile lowland areas and floodplains have the greatest potential for impact to buried archaeological resources. The amount of excavation, use of heavy equipment, increased road use, and presence of large soil piles during construction would create greater impacts to air quality.

The major benefits of underground construction are the absence of overhead transmission towers and reduced long-term impacts to visual resources. The absence of towers would also eliminate risks to avian collision, impacts to fire suppression, and aircraft collisions. Underground transmission lines also require less right-of-way after construction and would therefore reduce long-term land use impacts. However, given the vast amount of existing overhead transmission within the Project area, the need to create new transmission corridors is very low. Routing alternatives for the Project would likely parallel existing transmission lines, therefore reducing the potential visual mitigating benefits of an underground system. Socioeconomic impacts could be greater due to the greater construction costs.

Feasibility

While underground transmission lines are relatively immune to weather conditions, they are vulnerable to cable/splice failure, washouts, seismic events, and incidental excavation. An underground line is relatively easy to operate and maintain although it is more difficult to troubleshoot and repair than an overhead transmission line. Once the problem area is identified, the portion of the line between two splicing vaults would need to be replaced and would require additional excavation and construction. The average downtime or failure for underground high voltage cable systems is 100 to 220 actual hours. Depending upon the nature of the emergency, it could easily require 30 days to conduct repairs of an XLPE cable system, and possibly six months or more if the spare parts are not in inventory or the shelf life of the materials is not current. Long-term outages would be unacceptable for a circuit carrying bulk electric power. Underground transmission lines also have a shorter lifespan than overhead lines due to the degradation of the cable's surrounding insulation.

From a technical point of view, this area makes a poor candidate for an underground transmission line. Underground transmission is not suitable in areas of moderate to steep terrain (such as portions of the Angeles National Forest) and has a greater potential for damage from earthquakes and landslides. A portion of the transmission line would be located in close proximity to the San Andreas Fault zone and a seismic event could damage the underground cable, resulting in transmission loss. Placement of underground transmission lines on a slope for long distances may result in gravity, contraction and expansion effects, moving the cable down-slope. The native soils, particularly in the desert, generally possess inferior thermal properties, partly due to inadequate soil moisture levels, which would allow the dissipation of heat away from the cables. The inability to dissipate heat in turn de-rates the cable circuit. It is reasonable to assume that large amounts of more thermally favorable soil or backfill would need to be imported for the Project.

Access must be sufficient to accommodate the large construction equipment required for the excavation, installation and transport of materials. On steep slopes, access roads would need to be cut in switchback patterns for large construction vehicles.

The basic cost of undergrounding a high-voltage transmission line would be several times more expensive than the cost of overhead construction. The relatively high cost and installation requirements tend to prohibit the application of underground transmission systems for long-distance electric transmission.

Recommendation for Analysis in EIS/EIR

ELIMINATION. An underground high voltage transmission line would meet the purpose and need of the Project to transfer renewable energy, and assist LADWP in meeting RPS goals, greenhouse gas reduction goals, and electrical energy demands. The principle environmental advantage of undergrounding a transmission line would be the mitigation of adverse visual impacts of the transmission towers and conductors. However, an underground transmission line would still require above-ground ancillary facilities on or adjacent to the right-of-way, and result in substantially greater ground disturbance than overhead transmission lines and longer construction duration. It would create a greater potential for impacts to transportation, traffic, soils, socioeconomics, and archaeological, cultural, biological, and water resources. If an outage occurred, repair times could increase. An underground system would not result in any substantial reduction in other environmental effects, and is also infeasible for long distances. It is therefore not considered a reasonable alternative for the Project, and is recommended for elimination from detailed consideration for the Project components.

5.2.5 Superconductors

Alternative Description

Superconductors are high-capacity, low-impedance cables with either high-temperature superconductor (HTS) or low-temperature superconductor (LTS) wire. The superconductors use the phenomenon of superconductivity—zero electrical resistance is exhibited by many metals at near absolute zero temperature. The high-temperature superconductors operate at high temperatures and utilize liquid nitrogen for cooling. Lower-temperature superconductors operate at lower temperatures and require liquid helium for cooling. Liquid nitrogen is a cheap and abundant refrigerant; however, liquid helium is expensive and difficult to handle. Niobium is a type of material used in superconductors because it has the most favorable critical quantities of superconductivity and is practical to fabricate.

This alternative would use such superconductors in place of the proposed aluminum conductor material. The ability for superconductors to transfer much greater capacity than the proposed aluminum conductor would minimize the number of transmission lines required. Similar to the single-circuit 500 kV transmission line, this alternative would replace the two proposed transmission lines (new 230 kV and existing BR-RIN). The superconductors would be contained in a series of conduits to provide cooling of cables and would require an at-grade or underground installation.

Meeting the Purpose and Need

Superconductors would allow for the same amount of energy to be transmitted as the proposed overhead lines, and would therefore meet the purpose and need for the Project. They would enable the delivery of renewable resources, reduce greenhouse gas emissions, assist LADWP in meeting its RPS goals and electrical energy demands, allow for interconnection and expansion of renewable energy in the Tehachapi Mountains and Mojave Desert areas, and maximize the accommodation of future utility needs. However, effects to Forest Service and BLM managed lands would not be minimized.

Potential to Avoid and Minimize Environmental Effects

The ability for superconductors to transfer a greater capacity has the potential to minimize the number of towers and right-of-way expansion, therefore minimizing impacts to visual and land use resources. However, superconductors must be contained within a series of conduits that provide cooling to the cable itself (to superconductor's absolute zero, which may be negative 340 degrees Fahrenheit or colder). Therefore, the weight of this setup would require an at-grade or underground installation, thus causing similar impacts as conventional underground transmission.

Feasibility

Superconductors are generally utilized in distribution-level voltages (69 kV and under) or for very short distances (2,000 feet or less). The existing installations of superconductors are in controlled areas such as enclosed stations and test facilities. It would be very difficult to maintain uniform and reliable circulation of coolant in rolling and mountainous terrain for extended distances.

Recommendation for Analysis in EIS/EIR

ELIMINATION. Superconductors have the ability to transfer greater amounts of energy than the proposed aluminum conductors; however, they are still in the developmental stage. The longest high-voltage transmission line utilizing superconductors was only 2,000 feet long, and the technology is currently considered infeasible for long distances. The principle environmental advantage of superconductors would be the mitigation of adverse visual impacts of the transmission towers and conductors. However, superconductors would still require above-ground ancillary facilities on or adjacent to the right-of-way, and result in greater ground disturbance than overhead transmission lines and longer construction duration. It would create a greater potential for impacts to transportation, traffic, soils, socioeconomics,

and archaeological, cultural, biological, and water resources. It is therefore not considered a reasonable alternative for the Project, and is recommended for elimination from detailed consideration for the Project components.

5.3 TRANSMISSION ALTERNATIVES

5.3.1 Accessing Other Renewable Resource Areas

Alternative Description

The Renewable Energy Transmission Initiative (RETI) has identified a number of high quality renewable energy areas in Southern California—the Salton Sea/San Diego, Southeastern California, and Tehachapi/Owens Valley. The Salton Sea/San Diego resource area is rich with renewable resources, including substantial amounts of geothermal potential near the Salton Sea, solar resources throughout the area, and wind resources in local mountain ranges. LADWP would need to construct transmission lines to access this renewable resource area. The Southeast California area includes most of San Bernardino and Riverside counties; RETI has identified this resource area as having the largest quantity of potential resources (wind and solar). LADWP's existing transmission lines to this resource area have limited capacity to transfer that energy to the Los Angeles Basin.

LADWP's primary purpose and need for the BR RTP is to access the Tehachapi/Owens Valley resource area. The Mojave Desert has some of the highest solar insolation in the world, along with the most economical solar resources. Furthermore, the Tehachapi Mountains have excellent wind resources. LADWP's existing BR-RIN transmission line currently accesses this renewable resource area; however, transmission capacity is limited.

This alternative would consider accessing the Salton Sea/San Diego and Southeast California resource areas.

Meeting the Purpose and Need

Accessing the Salton Sea/San Diego and Southeast California resource areas would meet LADWP's purpose and need to access renewable resources. However, in order for LADWP to meet its RPS goals and reduce environmental impacts associated with greenhouse gas emissions, it must access a number of renewable resource areas. To effectively integrate wind and solar renewable resources into an electrical system, utility companies generally access a number of renewable resource areas to increase system reliability and flexibility. Concentrating a utility company's resources in one or two renewable resource areas may decrease its system reliability and flexibility. This alternative would also limit LADWP's ability to access renewable resources in the Tehachapi Mountains and Mojave Desert areas. In addition, LADWP also has the ability to integrate the Castaic Power Plant (a pump storage facility in the BR RTP area) to store intermittent renewable energy. LADWP does not have similar facilities in the other renewable resource areas.

Potential to Avoid and Minimize Environmental Effects

The potential environmental impacts associated with accessing these renewable resource areas involve or are likely to involve proposals for new transmission lines with much greater lengths than those proposed by the BR RTP, with associated impacts similar to or even greater than those of the BR RTP. Therefore, these would be likely to result in little to no avoidance of environmental effects when considered as a whole.

Feasibility

Accessing other renewable resource areas is feasible, as evidenced by current transmission line project proposals by LADWP. For example, the Southern Transmission System (STS) upgrade project would

access wind and geothermal energy from Utah. Another proposal is the Green Path North Project (GPNP) to access geothermal energy from the Salton Sea, and wind and solar from the Southern California Deserts.

Recommendation for Analysis in EIS/EIR

ELIMINATION. This alternative would access renewable energy and assist in meeting RPS and greenhouse gas reduction goals. However, to integrate intermittent renewable resources and maintain a reliable electrical system, LADWP should access a number of renewable resource areas. This alternative does not meet the purpose and need to deliver renewable energy sources from the Tehachapi Mountains and Mojave Desert areas. LADWP would also not be able to utilize existing facilities that would allow LADWP to store renewable energy. The need to access other renewable resource areas would likely involve the need for new transmission lines and therefore this alternative would be expected to have similar impacts to those of the proposed Project.

5.3.2 Segment D

Alternative Description

Segment D was initially identified in the siting study as a routing opportunity for the siting of a new double-circuit 230 kV transmission line from the Antelope Valley to the Castaic Power Plant. It would generally parallel the Los Angeles Aqueduct from about Cottonwood Creek and head southbound to Lancaster Road, and then west to the Interstate 5 freeway utility corridor within the Angeles National Forest. Five high-voltage transmission lines occur along the Interstate 5 section of the Segment. In addition to the high-voltage transmission lines are oil and gas pipelines. This routing opportunity would require a new 200 foot right-of-way.

After preliminary studies, a number of engineering and environmental issues were identified along Segment D. The Castaic Power Plant only had one available bay for connection of a single circuit. The BR RTP was proposing to add three new circuits into the Castaic Power Plant (a new double-circuit transmission line from the Barren Ridge Switching Station and the addition of a new circuit on existing structures from the power plant to Haskell Canyon). Expansion of the Castaic Power Plant to accommodate additional connection bays would require significant modification of the plant that would be well beyond the scope of the Project and cost hundreds of millions of dollars. Also, the area north of the power plant has very unstable terrain where it would be very difficult to construct a new transmission line. The construction of a new transmission line along Segment D has the potential for impacts to the Old Ridge Route, a historic district in very close proximity to the Castaic Power Plant.

In order for Segment D to connect to the Haskell Canyon Switching Station, it would also require the construction of a new double-circuit transmission line along Segment J. This would be in addition to the proposed addition of a circuit on existing structures along Segment J. Along Segment J would traverse the Castaic Lake State Recreation Area, managed by the County of Los Angeles Department of Parks and Recreation, and also a designated Land and Water Conservation Fund site. Expansion of right-of-way along the Land and Water Conservation Fund site would constitute a conflict with its provisions and would require a conversion of land. The conversion process of Land and Water Conservation Fund land from a recreational use to a non-recreational use may take up to 10 years and require compliance (monetary compensation, land, or both).

During the February 2009 Informational Public Meetings, LADWP, BLM and the Forest Service informed the public of a recommendation to eliminate Segment D due to constraints to the Castaic Power Plant, unstable terrain, constraints of right-of-way expansion on lands south of Castaic, and the potential for significant impacts to the Old Ridge Route. However, the public, as well as elected officials, expressed concern about impacts to the communities of Elizabeth Lake, Green Valley, Leona Valley,

Agua Dulce, and Antelope Acres. They recommended that the lead agencies reconsider studying Segment D and identify a way to make the route viable.

To make Segment D viable, the alignment was modified to terminate at the proposed Haskell Canyon Switching Station instead of at the Castaic Power Plant as originally proposed. The revised Segment D is approximately 48 miles long and generally parallels the Los Angeles Aqueduct, beginning near Cottonwood Creek and traveling south to Lancaster Road. No existing transmission lines occur along the portion of Segment D located north of the ANF. The segment then proceeds west to the Interstate 5 designated utility corridor, which contains five high-voltage transmission lines and oil and gas pipelines, and heads southeast paralleling LADWP's existing Castaic-Rinaldi Corridor (Castaic-Northridge/Sylmar and Castaic-Olive 230 kV transmission lines) to the proposed Haskell Canyon Switching Station.

Meeting the Purpose and Need

Segment D is an alternative location for the siting of a new 230 kV double-circuit transmission line. Therefore, it would convey the same amount of power as the proposed action, and would meet much of the action's basic purpose and need. It would enable the delivery of renewable resources, reduce greenhouse gas emissions, assist LADWP in meeting its RPS goals and electrical energy demands, allow for interconnection and expansion of renewable energy in the Tehachapi Mountains and Mojave Desert areas, and maximize the accommodation of future utility needs.

The Land and Water Conservation Fund conversion process may take up to 10 years. Although the time delays to obtain Project approval and right-of-way, as well as to build and construct the Project, may hinder LADWP's ability to meet its 2020 RPS goals, there is uncertainty as to the exact timing of the Land and Water Conservation Fund process.

Potential to Avoid and Minimize Environmental Effects

Segment D is located in an area with very few residential viewers and would avoid impacts to the communities of Elizabeth Lake, Green Valley, Leona Valley, Agua Dulce, and Antelope Acres. However, it has the potential to have greater visual impacts than the proposed Project. The portion of Segment D north of the Angeles National Forest does not contain existing high-voltage transmission lines and therefore would require the creation of a new utility corridor that would increase visual impacts. More roads would have to be improved or established than for the proposed Project. Also, the Old Ridge Route is listed as a historic district on the National Register. The construction of a new transmission line would alter the visual environment of the Old Ridge Route.

Segment D would avoid the San Francisquito Canyon, which is considered a particularly sensitive resource due to its eligibility for designation as a Wild and Scenic River. However, Segment D has a greater potential to impact land uses than the proposed Project. Sections of land on the Angeles National Forest, adjacent to Segment D, are designated roadless areas. Segment D would potentially contribute to greater degradation of roadless areas as the alignment is closer to them under Segment D than the Proposed Action. Segment D would also traverse the Castaic Lake State Recreation Area, which is also a Land and Water Conservation Fund site; it provides recreational opportunities such as hiking, backpacking, equestrian use, bicycling, mountain biking, and hunting. The addition of a new transmission line would not be in compliance with the provisions of the Land and Water Conservation Fund, and during construction activities the recreational area and trails would be temporarily restricted from public use. Segment D may also disrupt and disturb existing residential land uses associated with the Paradise Ranch Mobile Home Park, the community of Castaic, and development of the North Lake Specific Plan (an approved master-planned community in the Castaic area).

Biological resources also have the potential for greater impacts from Segment D than the proposed Project. Biological surveys conducted along Segment D identified Riparian Conservation Areas (RCAs)

that contain suitable habitat for the arroyo toad, California red-legged frog, southwestern willow flycatcher, and least Bell's vireo, which are all federal- or state-listed special-status species. The need to construct or improve more access roads than for the proposed Project would increase the potential for impacts to suitable habitat and the special-status species supported within them. Segment D is more likely than the proposed Project to impact the California Condor due to its closer proximity to known condor use areas.

Finally, Segment D has the potential for greater geological resource impacts. This routing opportunity traverses unstable terrain that is prone to landslides, areas of severe erosion potential, areas with expansive soils and high corrosive potential, areas of groundwater less than approximately 25 feet deep, and areas with potential for inundation from dam failure or seiche. The terrain along this area would make construction of a new transmission line very difficult.

Feasibility

Construction of a new 230 kV double-circuit transmission line along Segment D is feasible. However, as mentioned above, the conversion of Land and Water Conservation Fund lands may be lengthy, and obtaining similar land with comparable value may be very difficult. Segment D's unstable terrain also makes this routing opportunity much more difficult to construct.

Recommendation for Analysis in EIS/EIR

RETENTION. This routing opportunity would meet the purpose and need of the Project to transfer renewable energy, and assist LADWP in meeting RPS, greenhouse gas reduction goals, and electrical energy demands. However, in comparison to the proposed Project, it would have a potential for greater environmental impacts to visual resources, land use, biological resources, cultural resources, and geological resources. The required right-of-way through Land and Water Conservation Fund lands and unstable terrain may pose feasibility issues. At the request of the public and elected officials, this routing opportunity was retained to avoid impacts to the communities of Elizabeth Lake, Green Valley, Leona Valley, Agua Dulce, and Antelope Acres.

5.3.3 Midway to Vincent Corridor

Alternative Description

The Midway to Vincent Corridor is approximately 15.4 miles long and would traverse the ANF from the designated I-5 Utility Corridor to Segment G. The Midway to Vincent Corridor is also a designated Forest Service utility corridor that contains two existing Southern California Edison (SCE) 500 kV transmission lines (Midway-Vincent #1 and #2). During the siting study, it was identified as a potential routing opportunity for the siting of a new 230 kV transmission line. It was eliminated from further study because the alignment of the corridor traversed west to east across the Angeles National Forest. The purpose of the proposed Project was to transfer energy from the north (Barren Ridge Switching Station) to the south (Haskell Canyon). The greater length of this routing opportunity has the potential to pose reliability issues, and additional footprint across the Angeles National Forest would increase potential impacts to environmental resources.

After the 2009 Informational Public Meetings, the Midway-Vincent Corridor was reconsidered as a routing modification of a viable Segment D. It would avoid the constraints of the Castaic Power Plant, impacts to the Castaic Lake State Recreation Area and Land and Water Conservation Fund lands, and unstable terrain. The Midway to Vincent Corridor is not an end-to-end alternative; it is a routing opportunity through the Angeles National Forest from the Interstate 5 Utility Corridor to Segment G. In order for the Midway to Vincent Corridor to connect to the proposed Haskell Canyon Switching Station, this routing opportunity would require following Segment G south for 9.6 miles to the switching station (total distance of 25 miles).

Meeting the Purpose and Need

The Midway to Vincent Corridor is an alternative location for the siting of a new 230 kV double-circuit transmission line; therefore, it would convey the same amount of power as the proposed action, and would meet much of the action's basic purpose and need.

Potential to Avoid and Minimize Environmental Effects

The Midway to Vincent Corridor is a designated utility corridor; however, it is relatively undisturbed, has very limited access, and would require the construction of new access and spur roads. The need to construct new access roads would increase the potential for impacts to air quality, biological resources, water resources, and cultural resources when compared to the proposed action, which has existing access. The Midway to Vincent Corridor is also adjacent to designated Back Country Non-Motorized land, and the construction of access roads in these areas would not comply with the Angeles National Forest Land Management Plan.

The Midway to Vincent Corridor has the potential to have the greatest impacts to biological resources in comparison to the other routing opportunities identified for the BRRTP (Segments A through K). The corridor contains the highest concentration of riparian conservation areas, and within the corridor suitable habitat has been identified for several special-status species (including the least Bell's vireo, southwestern willow flycatcher, California red-legged frog, arroyo toad, and unarmored threespine stickleback). The Midway to Vincent Corridor would cross critical habitat for the arroyo toad and traverse a designated Critical Biological (CB) zone of the Angeles National Forest. The southern portion of Segment G that would connect this corridor to the Haskell Canyon Switching Station would not avoid crossing or approaching riparian areas potentially occupied by sensitive resident riparian-dependent wildlife, including the arroyo toad and red-legged frog.

The Midway to Vincent Corridor also has the potential for greater geological resource impacts similar to that of Segment D. It traverses unstable terrain that is prone to landslides, areas of severe erosion potential, areas with expansive soils and high corrosive potential, areas of groundwater less than approximately 25 feet deep, and areas with potential for inundation from dam failure or seiche. The steep and unstable terrain along this corridor would make construction of a new transmission line very difficult.

Although very few residential viewers would be impacted by the Midway to Vincent Corridor, it has the potential for greater visual impacts than the proposed action. The need to construct new access roads for a majority of the corridor would increase impacts to visual resources. Similar to Segment D, it is also in close proximity to the Old Ridge Route (a historic district on the National Register) and has the potential to alter the visual environment. Along the southern portion of Segment G, the San Francisquito Creek is a sensitive resource due to its eligibility for designation as a Wild and Scenic River and would not be avoided by the utilization of the Midway to Vincent Corridor.

Feasibility

Although feasible to construct, the need to build new access roads and a new transmission line in very steep and unstable terrain would pose significant constructability issues similar to those of Segment D.

Recommendation for Analysis in EIS/EIR

ELIMINATION. The Midway to Vincent Corridor would meet the purpose and need for the Project, but is recommended for elimination from further study in the EIS/EIR because it would not significantly reduce or avoid impacts to land use, cultural, biological, and visual resources, or geological hazards. The Midway to Vincent Corridor is much longer than the proposed action, and thus could potentially lead to more geographically extensive impacts. The increased length, steep topography and limited existing

access roads for construction could make the Midway to Vincent Corridor more difficult and costly to build in comparison to the proposed action.

5.3.4 Bouquet Canyon Alternative (Segment H, including the 110th and 115th Street Modifications)

Alternative Description

The Bouquet Canyon Alternative is a routing opportunity for the siting of a new 230 kV transmission line from the Antelope Valley to the proposed Haskell Canyon Switching Station. This routing opportunity would consist of Segment H and the minor 110th and 115th Street modifications; it is not an end-to-end alternative for the proposed Project.

Segment H was identified in the siting study as a routing opportunity from the Antelope Valley to the proposed Haskell Canyon Switching Station. A majority of Segment H would be located on Angeles National Forest System lands and would mostly parallel the newly constructed SCE Antelope-Pardee transmission line. The last 1.5 miles would follow the SCE 66 kV Saugus-Del Sur transmission line that was removed. Unlike with the other identified routing opportunities for the siting of a new transmission line, very limited access occurs along Segment H on the Angeles National Forest. To minimize impacts to the area, helicopter construction would be required to construct the new transmission line. All other routing opportunities for the proposed Project would be constructed via conventional ground construction (described in Section 1.1).

During the 2008 Public Scoping Meetings, residents in the western Lancaster area suggested the 110th Street modification to connect Segment F to Segment H, which would not follow the existing transmission lines to SCE's Antelope Substation. This modification was proposed to avoid bisecting private property near the Antelope Substation.

In February 2009 at the Informational Public Meetings, the same residents requested re-routing the modification to follow SCE's proposed Tehachapi Renewable Transmission Project's alignment along 115th Street instead. This would minimize the creation of numerous new transmission line corridors and lessen impacts to residents. The 115th Street re-route is five miles long and no existing transmission lines are located along this route. It would require slightly more improvements to existing access roads than the original alignment along Segments F and H.

Meeting the Purpose and Need

The Bouquet Canyon Alternative would provide an alternative location for the siting of a new 230 kV double-circuit transmission line and therefore would convey the same amount of power as the proposed action, and would meet much of the action's basic purpose and need. It would enable the delivery of renewable resources, reduce greenhouse gas emissions, assist LADWP in meeting its RPS goals and electrical energy demands, allow for interconnection and expansion of renewable energy in the Tehachapi Mountains and Mojave Desert areas, and maximize the accommodation of future utility needs.

Potential to Avoid and Minimize Environmental Effects

In comparison to the proposed action, the Bouquet Canyon Alternative would avoid impacts to the Wild and Scenic River and minimize the potential for acquisition of private property. Visual impacts would also be minimized, because fewer residential viewers live in close proximity to this alternative. Helicopter construction on the Angeles National Forest would minimize the construction of access roads and result in less ground disturbing activities when compared to the proposed action. The potential for permanent adverse impacts to biological, cultural, visual, and water resources may be minimized.

SCE's Antelope-Pardee 500 kV transmission line has just completed construction, and revegetation and rehabilitation are in progress. Construction of the BRRTP's new transmission line would most likely occur soon after completion of the revegetation and rehabilitation, and many of the same Antelope-Pardee construction staging areas would be utilized. The construction of two transmission line projects in the same area has the potential to increase cumulative effects.

Road and structure construction would remove vegetation, including the root system and topsoil, and would cause further disturbance of an area trying to re-establish. Soil compaction caused by construction would decrease the ability of soil to absorb moisture, and also inhibit seedling establishment. Re-establishment of the construction staging areas following construction of the BRRTP would be very difficult.

Helicopter construction would require utilization of many of the same fly yards and construction staging areas. The large construction staging areas are located mainly on private property and in close proximity to residential areas. Therefore, helicopter construction of the Bouquet Canyon Alternative has the potential to increase land use, noise, and air quality impacts, and most of all cumulative effects to those resources.

SCE is also proposing the construction of another new 500 kV transmission line called the Tehachapi Renewable Transmission Project (TRTP). BRRTP's Segment F and 115th Street modification would parallel TRTP's Segment 4 alignment. A number of high-voltage transmission lines already occur along Segment F. The construction of three transmission lines (Antelope-Pardee, TRTP and BRRTP) in the same vicinity would increase cumulative effects to residences in the area, and transportation and traffic.

Feasibility

Helicopter construction of a second transmission line adjacent to an energized line presents a number of construction and safety hazards. The construction of a new transmission line on very steep terrain down-slope to an adjacent energized line is considerably more dangerous to construct than the proposed BRRTP or the first transmission line in the corridor. Special construction techniques may be required to ensure safe construction of a second transmission line. Where dangers cannot be mitigated, it may be necessary for the adjacent transmission line to be de-energized.

Construction of the BRRTP by helicopter in close proximity to the existing Antelope-Pardee transmission line creates safety concerns: (a) Helicopter construction next to the energized line will necessitate longer than normal lift lines that must be controlled to prevent them from swaying or blowing into the existing energized line; (b) Maintenance, close-up inspection, and security patrols of the proposed line will continually run into the same problems. The inability to perform such actions safely will necessitate outages on one or both lines, which are increasingly difficult to obtain, especially on high-capacity lines such as the two involved. Additionally, waiting for the outage will delay maintenance and/or inspections and could reduce the reliability of the line at times.

Matching of the spans for the existing 500 kV transmission line with that of the proposed 230 kV transmission line may also be difficult. This may create a problem in areas of large crossings. The mitigation for such a situation is to place additional structures at intermediate points between the spans. Also, helicopter construction of such places would involve height offsets far greater than the typical situation. An additional mitigation for such a condition is to use structures that are much larger and stronger in an attempt to duplicate the capabilities of the original line and match its span for span.

In locations where the structures or roads associated with the existing line require some form of slope stabilization, it may not be feasible to construct down-slope. If the problem could not be mitigated with retaining structures or other slope stabilization methods, an alternate location would be required for the

impacted structures on the proposed line. Conversely, design and construction of the new line would need to be careful to avoid creating problems for the existing line located upslope.

A majority of Segment H is relatively undeveloped and steep in many places. Very limited access roads exist and some new roads may be required. These roads would be longer than normal in order to negotiate the relatively steep terrain, but would also require more extensive grading and more aggressive slope stabilization work than would be expected along other segments. Flat areas required for tensioning sites and construction areas would also require more extensive grading and slope protection (higher cut/fill volumes) than would be expected on the Proposed Action.

Structures built on the sides of slopes, especially steep slopes, need to be larger than those in the flatter areas found along other routing opportunities. The conductors on the uphill side of the structure must be sufficiently high above the ground to have electrical clearance with the rising nearby slope. This calls for a taller structure than would be required on flatter terrain. Additionally, the legs on the downhill side of the slope need to extend further to intercept the grade as it falls away. Since structures on slopes are most often viewed from the downhill side, which shows the longer legs, the structure appears larger. It is important to understand that since structure heights are often described in terms of the shortest leg, written descriptions of such structures or tabulated spreadsheets of these structures may not adequately describe the visual impact of the actual structure.

Helicopter construction of a new double-circuit 230 kV transmission line adjacent to an energized 500 kV transmission line in steep terrain would pose additional safety concerns in relationship to the proposed action, however this alternative is considered feasible.

Recommendation for Analysis in EIS/EIR

ELIMINATION. The Bouquet Canyon Alternative would meet the purpose and need for the Project. Ground disturbance and visual impacts would be minimized through the use of helicopter construction; however, impacts to air quality and noise would increase. Helicopter construction also poses construction and safety concerns that are not present for the proposed action. Cumulative effects for the Project would also increase because of the further disturbance of revegetated and rehabilitated areas and potential for impacts from three transmission line projects (Antelope-Pardee, TRTP and BR RTP) in the same vicinity.

5.3.5 Green Valley Modification (Alternative 2A)

Alternative Description

During the 2008 scoping meetings, Green Valley residents proposed the modification of Segment G to avoid impacts to their community. The localized modification would be located west of Green Valley, over the ridge, along an existing fire road, and would be approximately one mile from the existing BR-RIN transmission line. The routing modification would be within Angeles National Forest lands, but outside the Forest Service 1000-foot designated utility corridor.

Meeting the Purpose and Need

The Green Valley modification routing alternative would convey the same amount of power as the proposed action, and would meet much of the action's basic purpose and need. It would enable the delivery of renewable resources, reduce greenhouse gas emissions, assist LADWP in meeting its RPS goals and electrical energy demands, allow for interconnection and expansion of renewable energy in the Tehachapi Mountains and Mojave Desert areas, and maximize the accommodation of future utility needs.

Potential to Avoid and Minimize Environmental Effects

While this alternative eliminates or minimizes social and community impacts to Green Valley, it would not minimize overall environmental effects in comparison to the proposed BR RTP. The modification would be located over a mile west of the existing transmission lines and would require a new utility

corridor, and would increase the potential for impacts to fire suppression efforts; it would also add an additional crossing of the Pacific Crest Trail (PCT).

The Green Valley Modification would minimize visual impacts to Green Valley residents; however, these visual impacts would occur over a wider area and would not comply with the Forest Land Management Plan (FLMP) direction to conserve the aesthetic, recreation, and open space values of “high-valued scenery such as scenic backdrops for local communities and increasingly rare values such as solitude.”

The Green Valley Modification area is relatively undisturbed except for the fire roads that loosely follow the ridge. Suitable habitat for special-status species, such as the arroyo toad, were found during the 2008 field season, and the area also supports unique habitat that is typically of limited areal extent in the region under study (e.g., riparian areas). This routing alternative would increase the significant impacts to biological resources in comparison to the proposed action.

Cultural sites involving multiple burials on private land along the proposed Segment G would be avoided with the Green Valley Modification. However, no cultural surveys have been conducted in the modification area, where there is a potential to uncover cultural sites and historic resources from aqueduct construction.

Feasibility

This routing alternative represents a change to the proposed action alignment and is considered feasible.

Recommendation for Analysis in EIS/EIR

RETENTION. The Green Valley Alternative was recommended for elimination during the Informational Public Meetings because it would create a new utility corridor within the Angeles National Forest and result in greater impacts to National Forest resources in comparison to the proposed action. To address the issues and concerns raised by the community of Green Valley and elected officials, LADWP realigned the proposed new 230 kV transmission line route to skirt the community and accomplish the primary objective of this alternative. However, the Green Valley Alternative as proposed by the community was modified to lessen impacts on the Angeles National Forest, and will also be considered in full detail within the EIS/EIR as a localized alternative to Alternative 2. This routing alternative will be designated Alternative 2a.

5.3.6 Antelope Valley Alternative (Segments C and E)

Alternative Description

The physiography of the Project area can be broken up into two different types: the northern portion of the project area consists of flat desert areas of the Mojave Desert and Antelope Valley, and the southern portion contains the mountains of the Angeles National Forest.

Two routing opportunities from the Mojave Desert area to Antelope Valley were identified for the siting of a new 230 kV transmission line: Segment B and the combination of Segments C and E (referred to as the Antelope Valley Alternative). Segment B is part of LADWP’s proposed action and is approximately 27 miles long. It starts just north of Mojave, California, parallel to LADWP’s existing 230 kV Barren Ridge – Rinaldi (BR-RIN) and 500 kV Pacific Direct Current Intertie (PDCI) transmission lines, and travels south towards the Antelope Valley California Poppy Reserve. The Antelope Valley Alternative is 33 miles long and would also start just north of Mojave, California, parallel the Los Angeles Aqueduct southwest to Cottonwood Creek, then turn southeast and parallel three existing SCE high-voltage transmission lines to the Antelope Valley California Poppy Reserve. To identify which routing opportunity through the northern portion of the Project would be carried forward in the EIS/EIR, Segment B and the Antelope Valley Alternative were compared.

Meeting the Purpose and Need

The Antelope Valley Alternative would convey the same amount of power as the proposed action, and would meet much of the action's basic purpose and need. It would enable the delivery of renewable resources, reduce greenhouse gas emissions, assist LADWP to meet its RPS goals and electrical energy demands, allow for interconnection and expansion of renewable energy in the Tehachapi Mountains and Mojave Desert areas, and maximize the accommodation of future utility needs.

Potential to Avoid and Minimize Environmental Effects

In comparison to the proposed action, the Antelope Valley Alternative has fewer residences in close proximity to the transmission line (250 feet or less from the proposed centerline) and would avoid impacts to residences. However, the Antelope Valley Alternative would require an additional six miles of transmission line and therefore be expected to have a greater amount of ground disturbance and potential for impacts to environmental resources than Segment B.

The Antelope Valley Alternative would increase visual impacts. Approximately 22 of the 33 miles would be within a new transmission line corridor; the remaining 11 miles of the alternative would parallel three existing SCE transmission lines. Segment B, however, would parallel two existing LADWP transmission lines for its entire length. The Antelope Valley Alternative would also cross the Pacific Crest Trail and come in close proximity to the Antelope Valley California Poppy Reserve.

The potential for impacts to biological and water resources would increase for the Antelope Valley Alternative in comparison to the proposed action. A greater number of stream crossings would occur along the alternative, and it would cross two Significant Ecological Areas (SEAs)—the Joshua Tree Woodlands and San Andreas Rift Zone—ecologically important or fragile land and water areas. It also has the potential to impact valuable plant and animal communities through removal and/or disturbance. The alternative would also generally parallel the Los Angeles Aqueduct; to avoid impacts to the aqueduct, LADWP must construct the new transmission line at least 200 feet from the aqueduct.

Existing access roads occur along the entire length of Segment B, whereas only 13 miles along the Antelope Valley Alternative have existing access. Four miles of the Antelope Valley Alternative would require construction of new access roads and 15 miles would require improvements to existing access roads. The construction and improvements to access roads would increase impacts to air quality and biological, cultural, visual and water resources.

Feasibility

The alternative represents a relatively minor change to the proposed action and is considered feasible.

Recommendation for Analysis in EIS/EIR

The Antelope Valley Alternative would meet the purpose and need of the Project to transfer renewable energy, and assist LADWP in meeting RPS and greenhouse gas reduction goals and electrical energy demands. It would avoid impacts to residences in close proximity to the proposed action's Segment B, but would create a new transmission corridor and increase the potential for impacts to visual resources, biological resources, water resources, air quality, and cultural resources. This alternative would also require more new access roads and improvements to the existing access roads.

RETENTION of SEGMENT C. Although Segment C would require the creation of a new utility corridor and the construction and improvement of access roads, and has the potential to increase impacts to air quality, biological resources, cultural resources, visual resources, and water resources, it will be retained for further study to allow Segment D a northern connection to the Barren Ridge Switching Station.

ELIMINATION of SEGMENT E. Segment E would require an additional 6.5 miles in comparison to the proposed action and is recommended for elimination from further study in the EIS/EIR, because it would not significantly reduce or avoid significant impacts to air quality, biological, cultural, visual, and water resources.

5.3.7 Segment I

Alternative Description

Segment I was identified in the siting study as a routing opportunity for the siting of a new double-circuit 230 kV transmission line from the Antelope Valley to the proposed Haskell Canyon Switching Station. It is 31 miles long and traverses 27 miles of privately land and four4 miles of USFS-managed lands, and starts at the Antelope Substation headed southeast to Palmdale (four existing Southern California Edison high-voltage transmission lines occur along this portion), then makes a sharp turn and heads southwest to Haskell Canyon along two existing LADWP high-voltage transmission lines. This routing opportunity would require a new 200- foot ROW.

Just south of SCE'S Antelope Substation are six SCE high- voltage transmission lines. Multi-circuit towers are not an option since SCE owns the transmission lines in their portion of the segment. Crossing the lines would be very difficult in this area due to the required hierarchy of the various voltages: 230 kV would need to go under 500 kV lines but over 220 kV or 138 kV. Six different lines would need to be crossed, and SCE would need to raise up their its 500 kV line substantially to accommodate the 230 kV line traveling underneath. Also, weaving through the various transmission lines may cause reliability issues for both LADWP and SCE.

Meeting the Purpose and Need

Segment I would convey the same amount of power as the proposed action, and would meet much of the action's basic purpose and need. It would enable the delivery of renewable resources, reduce greenhouse gas emissions, assist LADWP to meet its RPS goals and electrical energy demands, allow for interconnection and expansion of renewable energy in the Tehachapi Mountains and Mojave Desert areas, and maximize the accommodation of future utility needs.

Potential to Avoid and Minimize Environmental Effects

To avoid and minimize acquisition of private property in Leona Valley, the Ritter Ranch re-route was considered, which would parallel SCE's TRTP Segment 2 alignment around the Ritter Ranch Development to LADWP's existing Victorville- – Rinaldi and Adelanto- – Rinaldi 500 kV transmission lines. There is also an area where the line goes south that would creates a triangular "indefensible space"—an area trapped between transmission line corridors that is difficult or impossible for firefighters to access or defend in the event of a fire— and surrounds houses with transmission lines. Undergrounding in Ritter Ranch would be very difficult because of the terrain and need for conversion facilities.

In Agua Dulce, LADWP considered combining the existing 500 kV lines on a double-circuit tower and utilizing the existing ROW to construct the new 230 kV transmission line; additional ROW would be required to accommodate the taller towers and larger conductor swing area. However, LADWP's reliability would be compromised by placing both 500 kV lines on single structures, since these lines deliver a significant portion of the city's power.

To minimize acquisition of private property in Agua Dulce, re-routes were considered that would run along the foothills to skirt the community along the foothills and minor re-route would avoid residences. However, indefensible spaces would be created, and which it would increase the potential for impacts to fire suppression efforts. These re-routes would also have visual impacts to a movie ranch. The re-route that skirts the community would create a new corridor on NFS lands where there are no existing roads or structures, so helicopter construction would be used.

Segment I has a greater number of residences and residential viewers in close proximity to the proposed centerline than the Proposed Action. However, Segment I would avoid impacts to the communities of Elizabeth Lake and Green Valley, and avoid the San Francisquito Canyon (considered a particularly sensitive resource due to its eligibility as a designated Wild and Scenic River),; as well as minimize impacts to the ANF. Therefore, Segment I was retained as a feasible alternative to the proposed Project.

Segment I has a greater potential to impact geological resources than the Proposed Action. It crosses a distinctive geologic feature (white tuff marker beds). Traverses the San Andreas fault zone diagonally and has the longest distance of departure from the high impact areas of all the routing opportunities through the ANF. Segment also has the most miles of high levels of earthquake ground shaking areas and highest ratio percentage of liquefaction zones and corrosive soil areas. (This is partly due to the longer distance of Segment I and the availability of existing geologic data.)

Feasibility

Construction of a new 230 kV double-circuit transmission line along Segment I is feasible.

Recommendation for Analysis in EIS/EIR

RETENTION. This routing opportunity would meet the purpose and need of the Project to transfer renewable energy, and assist LADWP in meeting RPS, greenhouse gas reduction goals, and electrical energy demands. However, in comparison to the proposed Project, it would have a potential for greater environmental impacts to visual resources, land use, and potential for geological hazards.

5.3.8 Haskell Canyon Switching Station Site B

Alternative Description

As a component of the BRRTP, LADWP proposes the construction of a new switching station in Haskell Canyon, south of the ANF, on LADWP-owned property at the convergence of several existing and proposed 230 kV transmission lines. The proposed site is referred to as Site A.

The station would be approximately 400 feet by 600 feet to accommodate the necessary equipment, such as circuit breakers, disconnect switches, relays, control cable, relay house, control house, and drainage area. The relay and control houses would each be approximately 30 feet long by 12 feet wide by 10 feet high and constructed of gray concrete block. The internal access road would be approximately 16 feet wide, and the facility would be enclosed by chain-link fencing for security.

Site B was identified as an alternative switching station site, and is located north of Santa Clarita, approximately one mile south of Site A. Figure 7 illustrates the locations of both sites. LADWP would have to acquire additional property to build Site B.

FIGURE 7. HASKELL SUBSTATION ALTERNATIVE SITE LOCATIONS.



Potential to Avoid and Minimize Environmental Effects

The proposed Site A would be constructed within Haskell Canyon, approximately 1.5 miles north of residential communities of Saugus and Santa Clarita. Construction of the switching station at Site A would require significant grading and ground disturbing impacts and is anticipated to have a greater potential for impacts to air quality than Site B.

Site B would be located a half mile north of residences in Santa Clarita and would be visible to residents in nearby communities. A planned community development, Cooper Creek North (TR47760), is also planned in the same vicinity. There is also a greater potential for landslides and liquefaction at Site B than Site A.

Feasibility

The construction of a switching station at Site B is feasible; however, there is a potential for significant impacts to the switching station due to landslides and liquefaction. Also, there is a planned development in the same area and acquiring the property may not be feasible.

Recommendation for Analysis in EIS/EIR

ELIMINATION. Site B is in closer proximity to existing and planned residential communities and has the potential for greater impacts to visual resources and land use. There is also a very high potential for landslide and liquefaction within this area, and it would therefore not be feasible to construct the switching station at this site. Therefore, Site B is recommended for elimination from further study in the EIS/EIR.

5.4 SUMMARY TABLE OF ALTERNATIVES CONSIDERED AND ELIMINATED

The summary table below lists all alternatives that were considered for the proposed Project and identifies: 1) the alternative's ability to meet the purpose and need of the Project; 2) the alternative's potential to avoid or minimize environmental effects; 3) if the alternative is feasible; 4) recommendation for analysis in the EIS/EIR; and 5) rationale for retention or elimination.

TABLE 4. SUMMARY OF ALTERNATIVES CONSIDERED AND ELIMINATED

ALTERNATIVES	MEETS PURPOSE & NEED	POTENTIAL TO AVOID OR MINIMIZE ENVIRONMENTAL EFFECTS	FEASIBILITY	RECOMMENDATION FOR ANALYSIS IN EIS/EIR	RATIONALE
SYSTEM ALTERNATIVES					
Energy Conservation & Demand-Side Management	No	Yes	Yes	Elimination	This alternative alone will not meet the electrical energy demands, meet RPS goals, or achieve greenhouse gas emission reduction. It would avoid and minimize environmental effects from the construction of a new transmission line.
Distributed Generation & In-basin Generation Expansion	No	Yes	Yes	Elimination	This alternative alone will not meet the electrical energy demands, meet RPS goals, achieve greenhouse gas emission reduction, or increase overall system reliability, nor would it provide delivery of renewable energy at a level and within a timeframe necessary to meet purpose and need.
Solar Alternative	No	Yes	Yes	Elimination	LADWP's current Solar Energy Plan would provide approximately 10% of LADWP's electrical demand. Although this alternative may avoid or minimize environmental effects from the proposed Project, this alternative alone would not meet the electrical energy demands or RPS goals. Additional transmission capacity may also be required to transfer solar energy from the Mojave Desert area to the Los Angeles Basin.
Reconductor Existing Transmission Line (No New Transmission Line)	No	Yes	Yes	Elimination	Transfer capacity of the utility corridor from Barren Ridge to the proposed Haskell Canyon Switching Station would be constrained, thereby limiting delivery of renewable energy, ability to meet future electrical demands, RPS goals, and greenhouse gas reductions goals, and interconnection and expansion of renewable energy in the Tehachapi Mountains and Mojave Desert areas. Construction of a temporary shoe-fly and need for additional transmission capacity would not minimize or avoid impacts to environmental resources.
New 230 kV Transmission Line (No Reconductoring)	No	Yes	Yes	Elimination	This alternative would allow LADWP to access renewable resources in the Tehachapi Mountains and Mojave Desert areas. By removing the reconductoring portion of the proposed Project, it would minimize the potential for impacts to environmental resources and reduce cumulative impacts of the proposed Project. LADWP's ability to meet projected electrical energy demands would be limited.

ALTERNATIVES	MEETS PURPOSE & NEED	POTENTIAL TO AVOID OR MINIMIZE ENVIRONMENTAL EFFECTS	FEASIBILITY	RECOMMENDATION FOR ANALYSIS IN EIS/EIR	RATIONALE
DESIGN ALTERNATIVES					
Direct Current Transmission	Yes	No	No	Elimination	The direct current system would meet the purpose and need of the Project to transfer renewable energy, and assist LADWP in meeting RPS goals, greenhouse gas reduction goals, and electrical energy demands. The number of transmission line towers would be minimized and right-of-way expansion reduced. However, large converter stations may increase the potential for impacts to air quality, land use, biological resources, earth resources, water resources, and visual resources. A multi-terminal DC system is technically and economically not feasible and therefore may limit the future interconnections into the system. That converter stations also come at considerably higher costs without clear benefits as compared to AC make this alternative infeasible for LADWP.
Quad-Circuit Towers	No	Yes	Yes	Elimination	Although this alternative would require less permanent right-of-way and minimize permanent impacts to visual resources, land use, and impacts to ANF- and BLM-managed lands, it would have limited transmission capacity to deliver renewable energy, and would therefore limit LADWP's ability to reduce greenhouse gas emissions, meet RPS goals and electrical demands, and allow interconnection and expansion of renewable energy resources. It would also create greater temporary impacts to construct the shoe-fly and remove the existing BR-RIN.
Alternative Voltages	Yes	No	No	Elimination	The single-circuit 500 kV transmission line would meet the purpose and need of the Project to transfer renewable energy, and assist LADWP in meeting RPS goals, greenhouse gas reduction goals, and electrical energy demands. However, it may not be feasible to construct a 500/230 kV substation within Haskell Canyon. The need for 500 kV to 230 kV conversions may limit LADWP on the number of interconnections to renewable energy projects. The increased footprint of the substations also has the potential to increase environmental impacts.

ALTERNATIVES	MEETS PURPOSE & NEED	POTENTIAL TO AVOID OR MINIMIZE ENVIRONMENTAL EFFECTS	FEASIBILITY	RECOMMENDATION FOR ANALYSIS IN EIS/EIR	RATIONALE
Underground Transmission	Yes	No	No	Elimination	An underground high-voltage transmission line would meet the purpose and need of the Project to transfer renewable energy, and assist LADWP in meeting RPS goals, greenhouse gas reduction goals, and electrical energy demands. The principle environmental advantage of undergrounding a transmission line would be the mitigation of adverse visual impacts of the transmission towers and conductors. However, it would still require above-ground ancillary facilities on or adjacent to the right-of-way, and result in greater ground disturbance than overhead transmission lines and longer construction duration. It would create a greater potential for impacts to transportation, traffic, soils, socioeconomic, and archaeological, cultural, biological, and water resources. If an outage occurred, repair times could increase. An underground system would not result in any substantial reduction in environmental effects, and is also infeasible for long distances.
Superconductors	Yes	No	No	Elimination	Superconductors have the ability to transfer greater amounts of energy than the proposed aluminum conductors. However, they are still in the developmental stage and considered infeasible for long distances. The principle environmental advantage of superconductors would be the mitigation of adverse visual impacts of the transmission towers and conductors. However, superconductors would still require above-ground ancillary facilities on or adjacent to the right-of-way, and result in greater ground disturbance than overhead transmission lines and longer construction duration. It would create a greater potential for impacts to transportation, traffic, soils, socioeconomic, and archaeological, cultural, biological, and water resources.
TRANSMISSION ALTERNATIVES					
Accessing Other Renewable Resource Areas	No	No	Yes	Elimination	This alternative would access renewable energy and assist in meeting RPS and greenhouse gas reduction goals. This alternative does not meet the purpose and need to deliver renewable energy sources from the Tehachapi Mountains and Mojave Desert areas. LADWP would also not be able to utilize existing facilities that would allow LADWP to store renewable energy. The need to access other renewable resource areas would likely involve the need for new transmission lines and therefore this alternative would be expected to have similar impacts to those of the proposed Project.

ALTERNATIVES	MEETS PURPOSE & NEED	POTENTIAL TO AVOID OR MINIMIZE ENVIRONMENTAL EFFECTS	FEASIBILITY	RECOMMENDATION FOR ANALYSIS IN EIS/EIR	RATIONALE
Segment D	Yes	Yes	Yes	Retention	This routing opportunity would meet the purpose and need of the Project to transfer renewable energy, and assist LADWP in meeting RPS goals, greenhouse gas reduction goals, and electrical energy demands. However, in comparison to the proposed Project, it would have a potential for greater environmental impacts to visual resources, land use, biological resources, cultural resources, and geological resources. The required right-of-way through Land and Water Conservation Fund lands and unstable terrain may pose feasibility issues. At the request of the public and elected officials, this routing opportunity was retained to avoid impacts to the communities of Elizabeth Lake, Green Valley, Leona Valley, Agua Dulce, and Antelope Acres.
Midway Vincent Corridor	Yes	No	Yes	Elimination	The Midway to Vincent Corridor would meet the purpose and need for the Project, but is recommended for elimination from further study in the EIS/EIR because it would not significantly reduce or avoid impacts to land use, cultural, biological, and visual resources, or geological hazards. The Midway to Vincent Corridor is much longer than the proposed action, and thus could potentially lead to more geographically extensive impacts. The increased length, steep topography and limited existing access roads for construction could make the Midway-Vincent sub-route more difficult and costly to build in comparison to the proposed action.
Bouquet Canyon Alternative (Segments H, including 110 th & 115 th Modifications)	Yes	No	Yes	Elimination	The Bouquet Canyon Alternative would meet the purpose and need for the Project. Ground disturbance and visual impacts would be minimized through the use of helicopter construction; however, impacts to air quality and noise would increase. Helicopter construction also poses construction and safety concerns that are not present for the proposed action or other routing opportunities. Cumulative effects for the Project would also increase because of the further disturbance of revegetated and rehabilitated areas and potential for impacts from three transmission line projects in the same vicinity.

ALTERNATIVES	MEETS PURPOSE & NEED	POTENTIAL TO AVOID OR MINIMIZE ENVIRONMENTAL EFFECTS	FEASIBILITY	RECOMMENDATION FOR ANALYSIS IN EIS/EIR	RATIONALE
Green Valley Modification (Alternative 2A)	Yes	Yes	Yes	Retention	The Green Valley Modification would create a new transmission line corridor through the Angeles National Forest and add an additional crossing of the Pacific Crest Trail. This would increase the potential for impacts to visual resources, land use and recreation, fire suppression efforts, and biological resources. In response to the concerns of the community of Green Valley, LADWP has realigned the proposed new 230 kV transmission line route to skirt the community and accomplish the primary objective of this alternative; however, the routing alternative proposed by the community of Green Valley will also be carried forward for full analysis in the EIS/EIR.
Antelope Valley Alternative (Segment C and E)	Yes	No	Yes	Segment C: Retention Segment E: Elimination	The Antelope Valley Alternative would transfer renewable energy, and assist LADWP in meeting RPS goals, greenhouse gas reduction goals, and electrical energy demands. It would avoid impacts to residences in close proximity to the proposed action's Segment B, but would create a new transmission corridor and increase the potential for impacts to visual resources, biological resources, water resources, air quality, and cultural resources. This alternative would also require more new access roads and improvements to the existing access roads. <i>RETENTION of SEGMENT C:</i> Although Segment C would require the creation of a new utility corridor and the construction and improvement of access roads, and has the potential to increase impacts to air quality, biological resources, cultural resources, visual resources, and water resources, it will be retained for further study to allow Segment D a northern connection to the Barren Ridge Switching Station. <i>ELIMINATION of SEGMENT E:</i> Segment E would require an additional 6.5 miles in comparison to the proposed project and is recommended for elimination from further study in the EIS/EIR, because it would not significantly reduce or avoid impacts to air quality, biological, cultural, visual, and water resources.

ALTERNATIVES	MEETS PURPOSE & NEED	POTENTIAL TO AVOID OR MINIMIZE ENVIRONMENTAL EFFECTS	FEASIBILITY	RECOMMENDATION FOR ANALYSIS IN EIS/EIR	RATIONALE
Segment I	Yes	Yes	Yes	Retention	RETENTION. This routing opportunity would meet the purpose and need of the Project to transfer renewable energy, and assist LADWP in meeting RPS, greenhouse gas reduction goals, and electrical energy demands. However, in comparison to the proposed Project, it would have a potential for greater environmental impacts to visual resources, land use, and potential for geological hazards.
Haskell Canyon Switching Station	Yes	No	No	Elimination	Site B has the potential for greater impacts to visual resources and land use, because it is in closer proximity to existing and planned residential communities than Site A. Site B also has a greater potential for landslide and liquefaction and it may not be feasible to construct the switching station at this site.

6 ALTERNATIVES TO BE ANALYZED IN THE EIS/EIR

An EIS/EIR will be prepared as an informational disclosure document used to inform agency decision makers and the public of the environmental effects of the Project, identify possible ways to eliminate or minimize the potential significant or adverse effects, and describe reasonable alternatives to the proposed action/Project.

LADWP, the Forest Service and the BLM have identified that the proposed Project would have a potential to impact biological resources, cultural resources, earth resources, water resources, land use, public health and safety, recreation, and visual resources.

The following alternatives, as well as the no action alternative, were identified as a reasonable range of alternatives to the Project that would feasibly attain most of the basic objectives of the Project, but avoid or substantially lessen any of the significant or adverse effects of the Project.

6.1 NO ACTION ALTERNATIVE

NEPA Regulations (40 C.F.R. 1502.14(d)) and CEQA Guidelines (Section 15126.6(e)) require the analysis of the No Action Alternative. Under the No Action Alternative, the construction of a new 230 kV transmission line, the construction of a new Haskell Canyon Switching Station, or the expansion of the existing Barren Ridge Switching Station would not occur. The EIS/EIR must address the resulting environmental effects from taking no action and compare it to the effects of permitting the proposed action or an alternative to the proposed action.

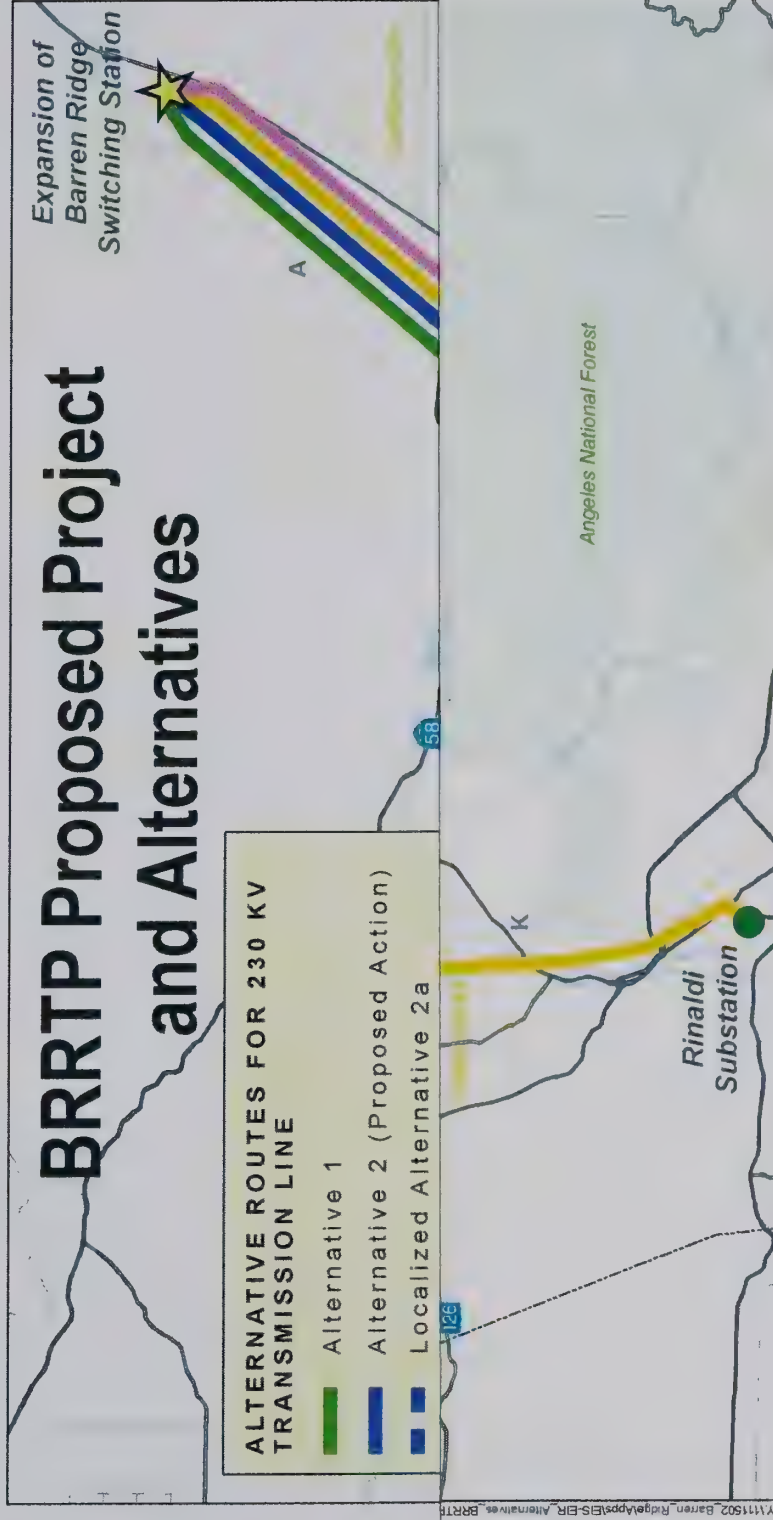
6.2 ROUTING ALTERNATIVES TO BE EVALUATED IN THE EIS/EIR

The regional siting study identified nine routing opportunities (Segments A through I) for the new 230 kV transmission line. As discussed within earlier sections of this report, some of the routing opportunities were adjusted or modified based on public input and preliminary environmental review, and preliminary electrical system studies. Segments E and H were recommended for elimination in Section 5.3. The remaining seven routing opportunities (Segments A, B, C, D, F, G and I) were combined to create end-to-end routing alternatives for the proposed double-circuit 230 kV transmission line between Barren Ridge Switching Station and the proposed Haskell Canyon Switching Station (see Figure 9). Descriptions of these routing alternatives follow in the sections below.

In addition to a new double-circuit 230 kV transmission line from Barren Ridge to Haskell Canyon, Alternatives 1 through 3 would also include the addition of a new circuit on existing towers between the Castaic Power Plant and Haskell Canyon, reconductoring of the existing BR-RIN transmission line, construction of a new Haskell Canyon Switching Station, and expansion of the existing Barren Ridge Switching Station.

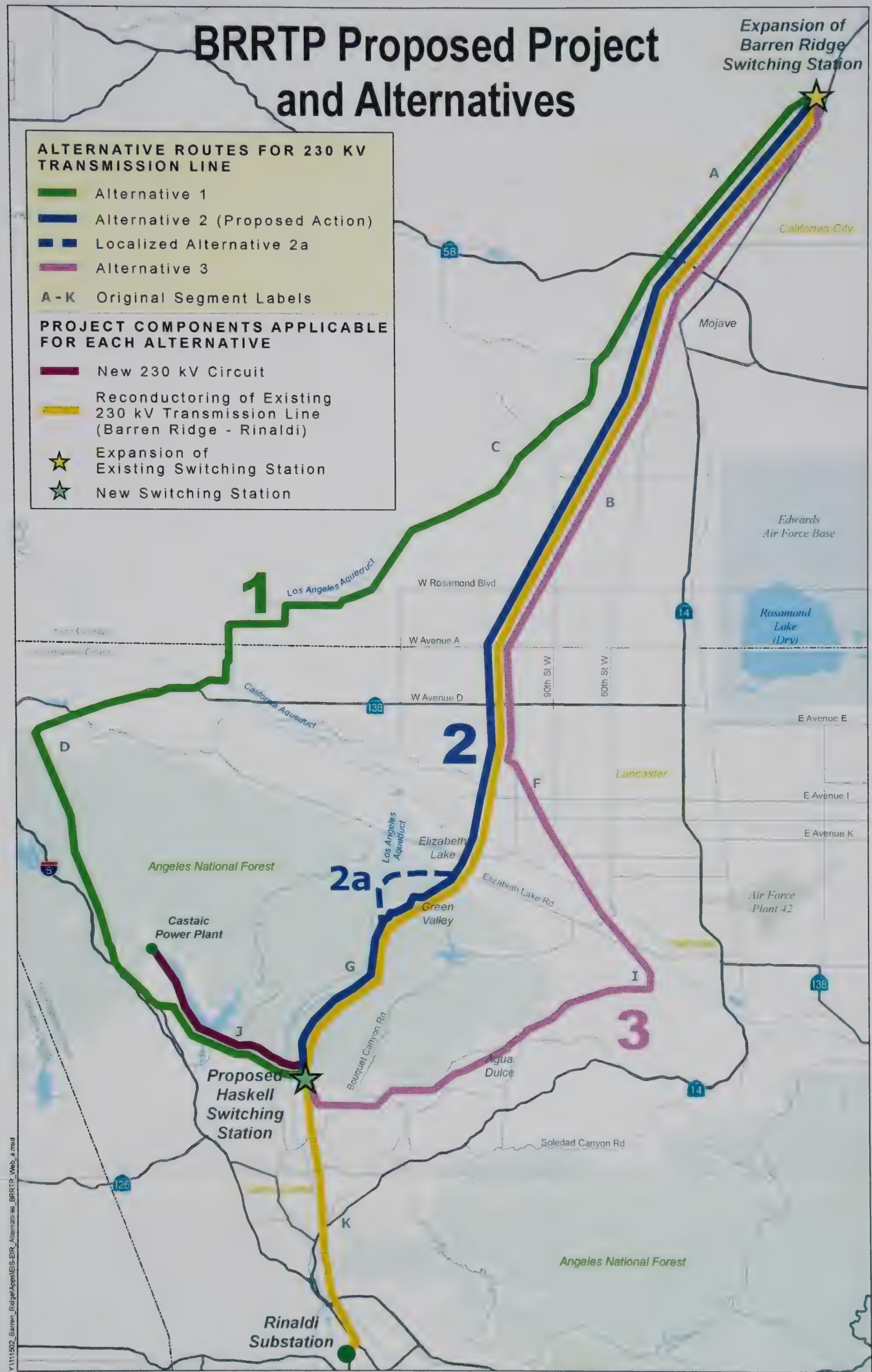
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FIGURE 8. ALTERNATIVES TO BE EVALUATED IN THE EIS/EIR



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FIGURE 8. ALTERNATIVES TO BE EVALUATED IN THE EIS/EIR



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6.2.1 Alternative 1 (Segments A, C, and D)

Alternative 1 is comprised of Segments A, C, and D. It runs from the Barren Ridge Switching Station to Mojave while paralleling LADWP's existing 230 kV BR-RIN and 500 kV PDCI transmission lines. It continues south-southeast to parallel the Los Angeles Aqueduct to Lancaster Road, where it travels west to the Interstate 5 utility corridor. It then runs southeast along LADWP's existing Castaic – Rinaldi corridor to the proposed Haskell Canyon Switching Station. This alternative would avoid impacts to the communities of Elizabeth Lake, Green Valley, Leona Valley, Agua Dulce, and Antelope Acres.

6.2.2 Alternative 2 (Segments A, B, and G) – LADWP's Proposed Action

Alternative 2, LADWP's Proposed Action, is comprised of Segments A, B, and G. It begins at the Barren Ridge Switching Station and runs south, paralleling LADWP's existing 230 kV BR-RIN and 500 kV PDCI transmission lines. It travels south from Mojave towards the Antelope Valley California Poppy Reserve. It continues south into National Forest System lands, remaining within designated utility corridors, and ends at the proposed Haskell Canyon Switching Station.

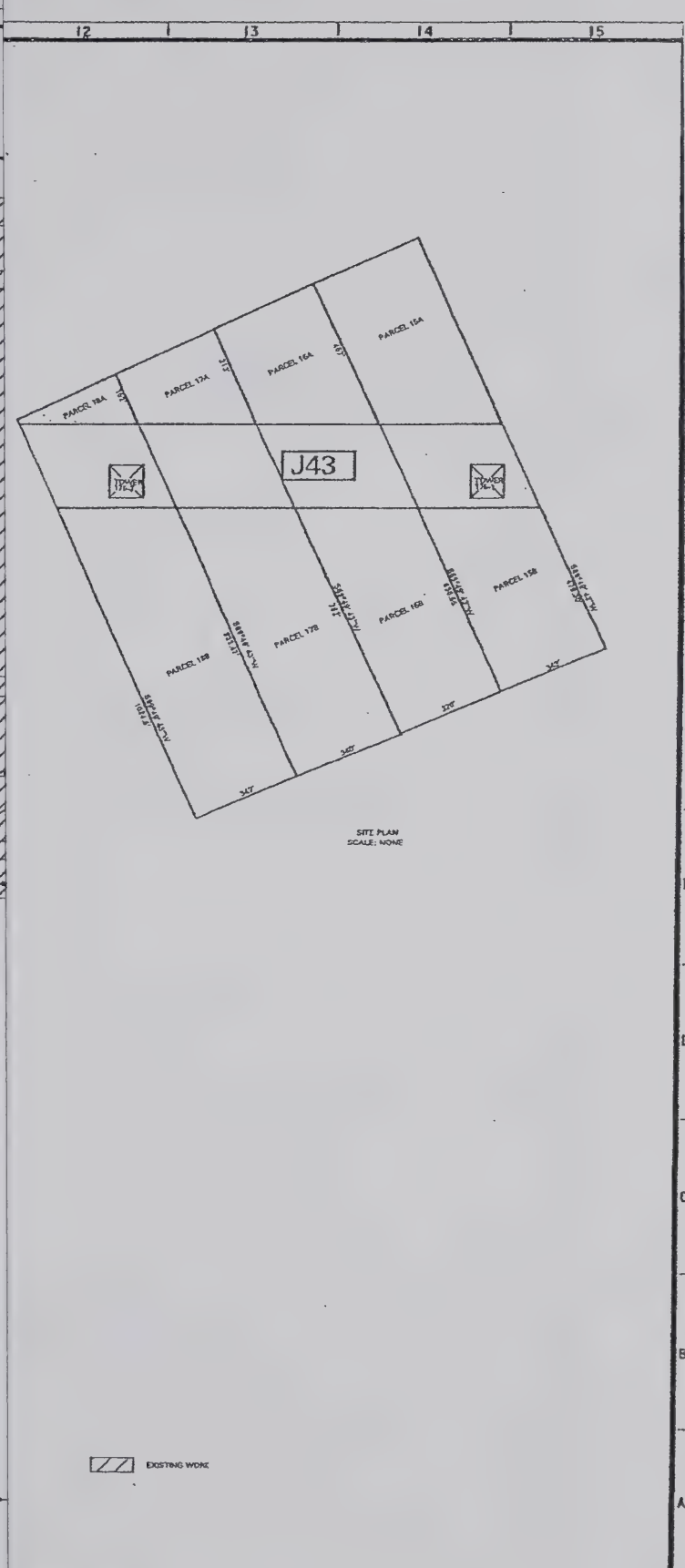
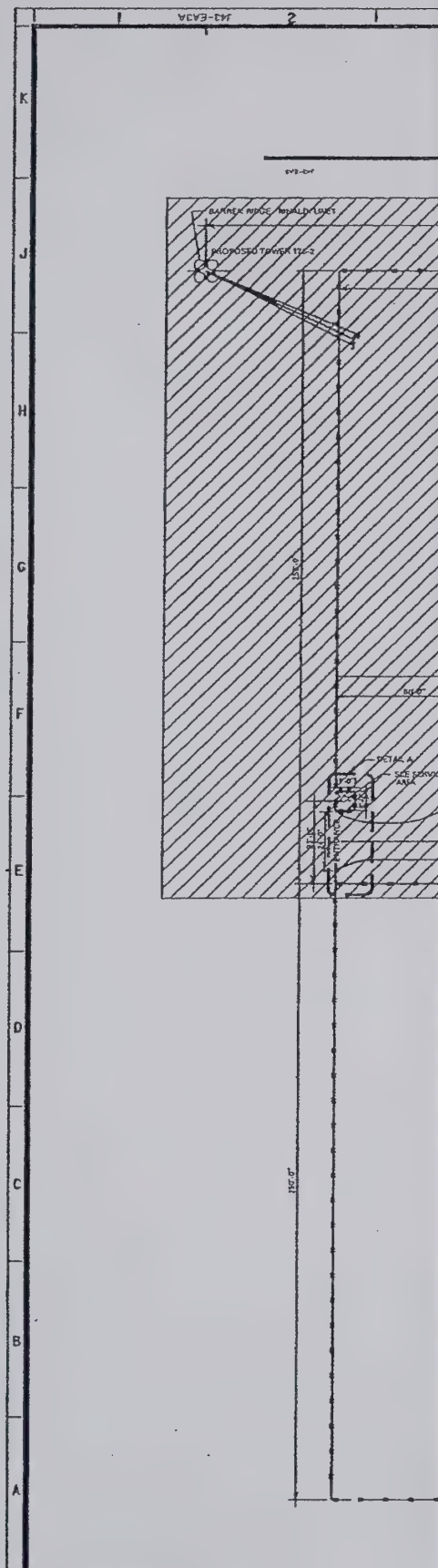
6.2.3 Alternative 2a (Segments A, B, and G, with Localized Green Valley Alternative)

Alternative 2a is comprised of Segments A, B, and G, and includes the localized Green Valley alternative. It begins at the Barren Ridge Switching Station and runs south, paralleling LADWP's existing 230 kV BR-RIN and 500 kV PDCI transmission lines. It travels south from Mojave towards the Antelope Valley California Poppy Reserve. It continues south into National Forest System lands, bypasses the community of Green Valley, and over the ridge along an existing fire road. The routing modification would be within Angeles National Forest lands, but outside the Forest Service 1000-foot designated utility corridor. The Alternative connects back to Segment G south of Green Valley, and ends at the proposed Haskell Canyon Switching Station.

6.2.4 Alternative 3 (Segments A, B, F, and I)

Alternative 3 is comprised of Segments A, B, F, and I. It begins at the Barren Ridge Switching Station and runs south, paralleling LADWP's existing 230 kV BR-RIN and 500 kV PDCI lines. It travels south from Mojave towards the Antelope Valley California Poppy Reserve. It then travels southeast past SCE's Antelope Substation to Palmdale, paralleling SCE's existing high-voltage transmission lines. It makes a sharp turn to the south-southwest to Haskell Canyon while paralleling LADWP's existing Victorville-Rinaldi 500 kV and Adelanto-Rinaldi 230 kV transmission lines. This alternative would avoid potential impacts to the eligible Wild and Scenic River and minimize impacts to Angeles National Forest lands.

APPENDIX C: SWITCHING STATION PRELIMINARY PLANS



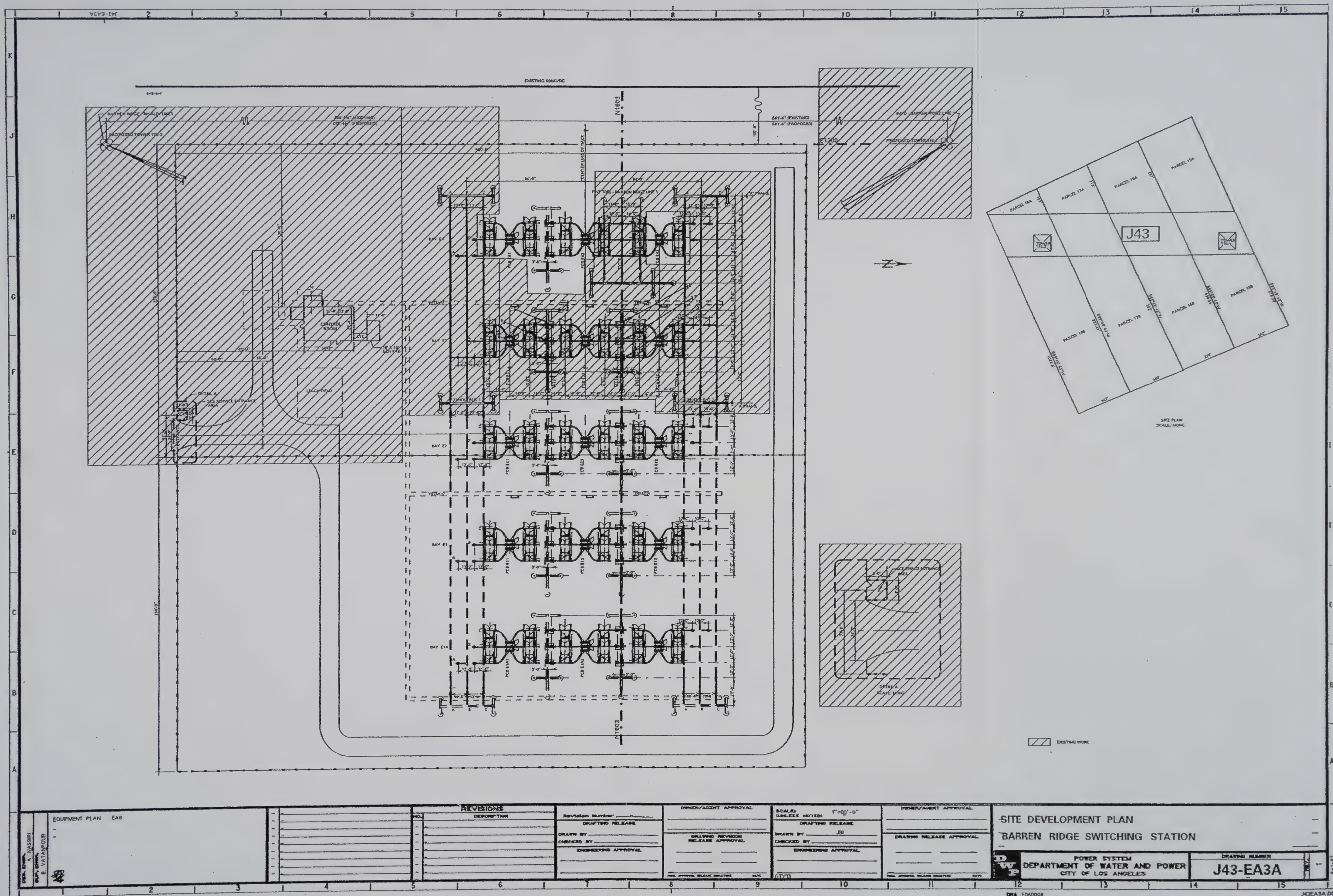
EQUIPMENT PLAN EAG

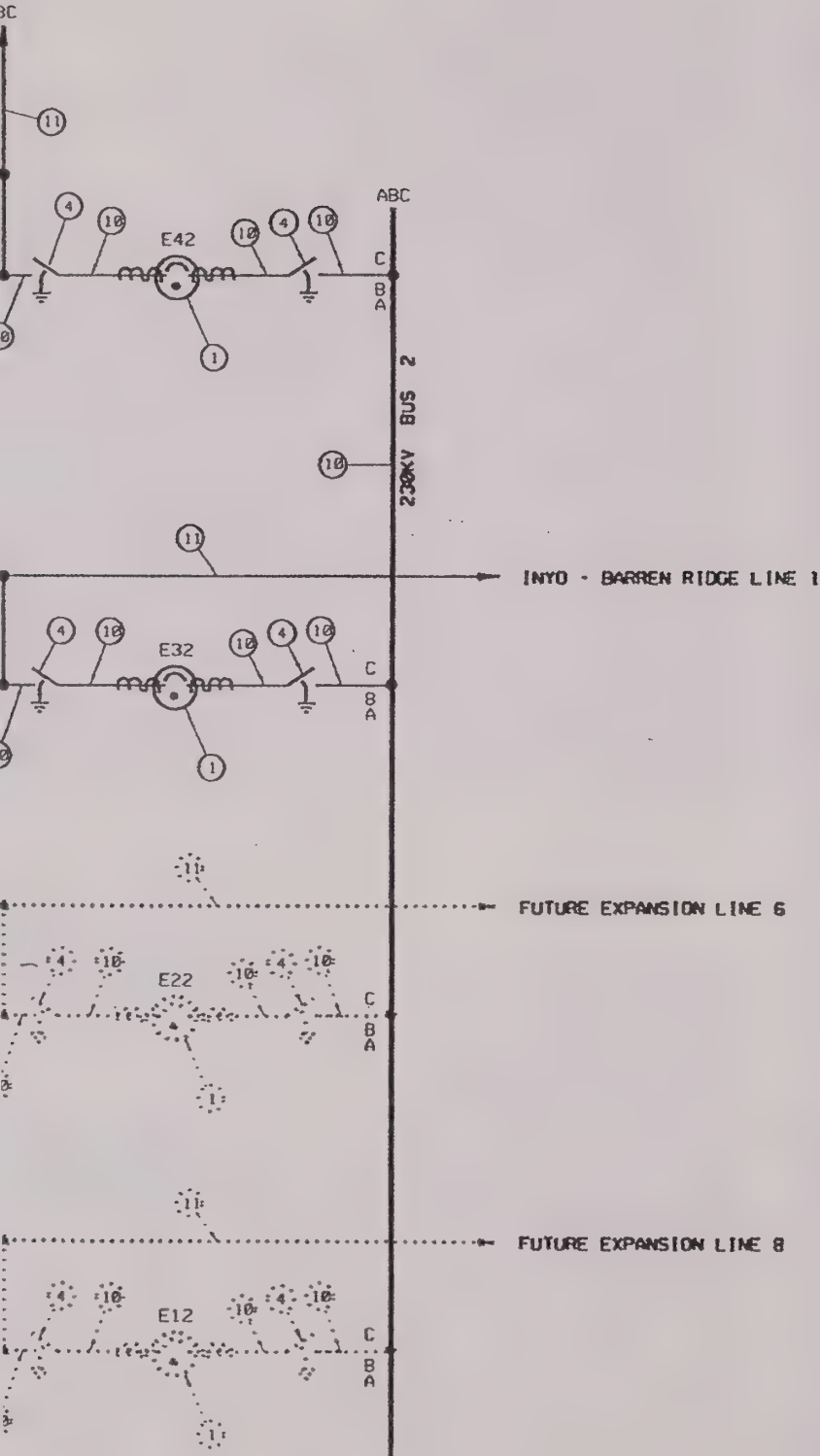
DATE: 10/10/09
 A. HASBRI
 B. VATANPOUR

SITE DEVELOPMENT PLAN
 BARREN RIDGE SWITCHING STATION

POWER SYSTEM
 DEPARTMENT OF WATER AND POWER
 CITY OF LOS ANGELES

DRAWING NUMBER
J43-EA3A





PART NO.	PARTS LIST DESCRIPTION
1	PCB, 230KV, 3000A, 40KA, SF6
2	
3	
4	SV. DISC, 230KV, 3000A, 3P W/ GND
5	SV. DISC, 230KV, 3000A, 3P
6	
7	
8	XFMR. COUPLING CAP VOLTAGE, 230KV-115V. (3)
9	
10	CABLE, ALUMINUM, 2500KCMIL, BARE
11	CABLE, ALUMINUM, 1272KCMIL, BARE, ACS/AN
12	
13	BUS. PIPE, AL, 3" IPS
14	
15	
16	
17	
18	
19	
20	

- NOTE:
1. CONTROL AND OPERATING VOLTAGE: 125VDC.
 2. SUPERVISORY VOLTAGE: 125VDC.

DESIGNED BY H. MORAN	SCALE: (UNLESS NOTED) NONE	CHECKED BY H. MORAN
DRAWING RELEASE APPROVAL	DRAFTING RELEASE	DRAWING RELEASE APPROVAL
ENGINEERING APPROVAL		

ONE LINE DIAGRAM

BARREN RIDGE SWITCHING STATION



POWER SYSTEM
DEPARTMENT OF WATER AND POWER
CITY OF LOS ANGELES

DRAWING NUMBER
J43-EA1

7-7-85

SYL - CEL 3
SYL - CEL 4

RIGHT
OF WAY
LIMIT

APN#
3244-026-028
PRIVATE
PROPERTY

APN#
3244-026-036
PRIVATE
PROPERTY

EXISTING
ACCESS
ROADS

APN#
3244-026-009
PRIVATE
PROPERTY

PROPERTY
LINE

APN#
3244-031-059
PRIVATE
PROPERTY

PRELIMINARY IMPROVED ACCESS ROAD SUMMARY:

ROAD LENGTH	3,800 FT
ROAD WIDTH	
EXISTING	14 FT
PROPOSED	22 FT
MAXIMUM SLOPE	15 %
MINIMUM CENTERLINE RADIUS OF CURVES	80 FT

NOTES:

THE ALIGNMENT OF THE PROPOSED PAVED ACCESS ROAD FOLLOWS THAT OF THE EXISTING PATROL ROAD.

THE EXISTING ACCESS ROAD WILL NEED TO BE WIDENED AND PAVED TO ALLOW SERVICE VEHICLES ACCESS TO THE PROPOSED STATION. WIDENING THE ROAD WILL REQUIRE ADDITIONAL GRADING AND EARTHWORK.

THE PROPOSED ACCESS ROAD MAY BE SUBJECT TO THE APPROVAL THE LOS ANGELES COUNTY FIRE DEPARTMENT.

THE EARTHWORK QUANTITIES AND CONSTRUCTION COST ESTIMATES LISTED ON SHEET 1 DOES NOT INCLUDE THE CONSTRUCTION OF THE IMPROVED ACCESS ROAD.

IN THIS ALTERNATIVE, THE PROPOSED STATION EXTENDS INTO PRIVATE PROPERTY. RIGHTS TO THIS PRIVATE PROPERTY MUST BE ACQUIRED BY LADWP.

PLEASE NOTE THAT THIS DESIGN IS PRELIMINARY. THE TOPOGRAPHY, PROPERTY LINES, PROJECT LIMITS AND DESIGN VARIABLES ARE APPROXIMATE AND THUS SUBJECT TO CHANGE. A NUMBER OF REMAINING ENGINEERING AND ENVIRONMENTAL ISSUES MUST STILL BE RESOLVED. THIS EXHIBIT, AND CORRESPONDING CONSTRUCTION COST ESTIMATE, ARE FOR PRELIMINARY SITE EVALUATION PURPOSES ONLY.

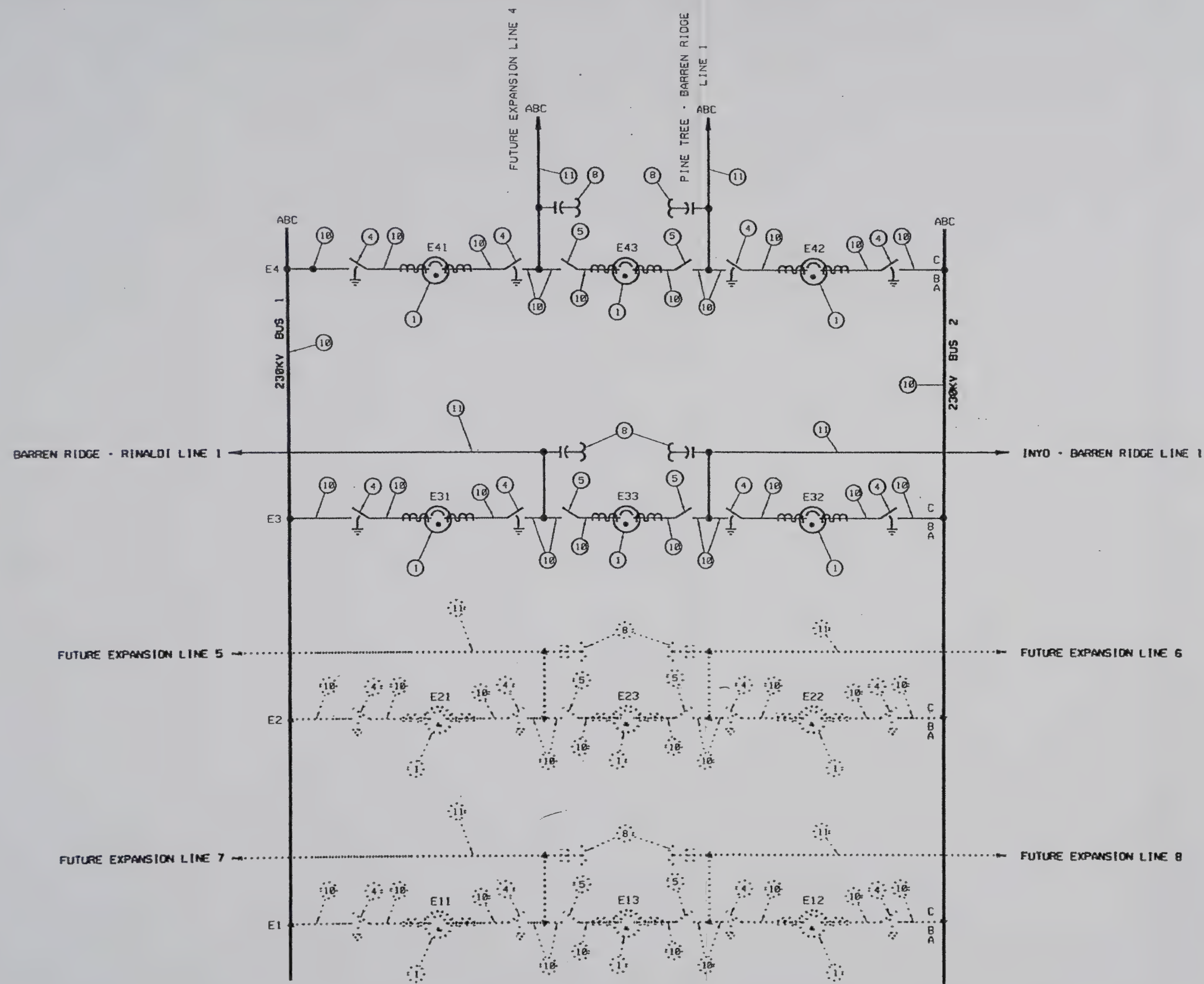
MINIARY GRADING - ALTERNATIVE (A-4) - 600' x 500' PAD
MAL TRANSMISSION ENGINEERING STATION ALIGNMENT
ELL CANYON SWITCHING STATION

POWER SYSTEM
DEPARTMENT OF WATER AND POWER
CITY OF LOS ANGELES

DRAWING NUMBER

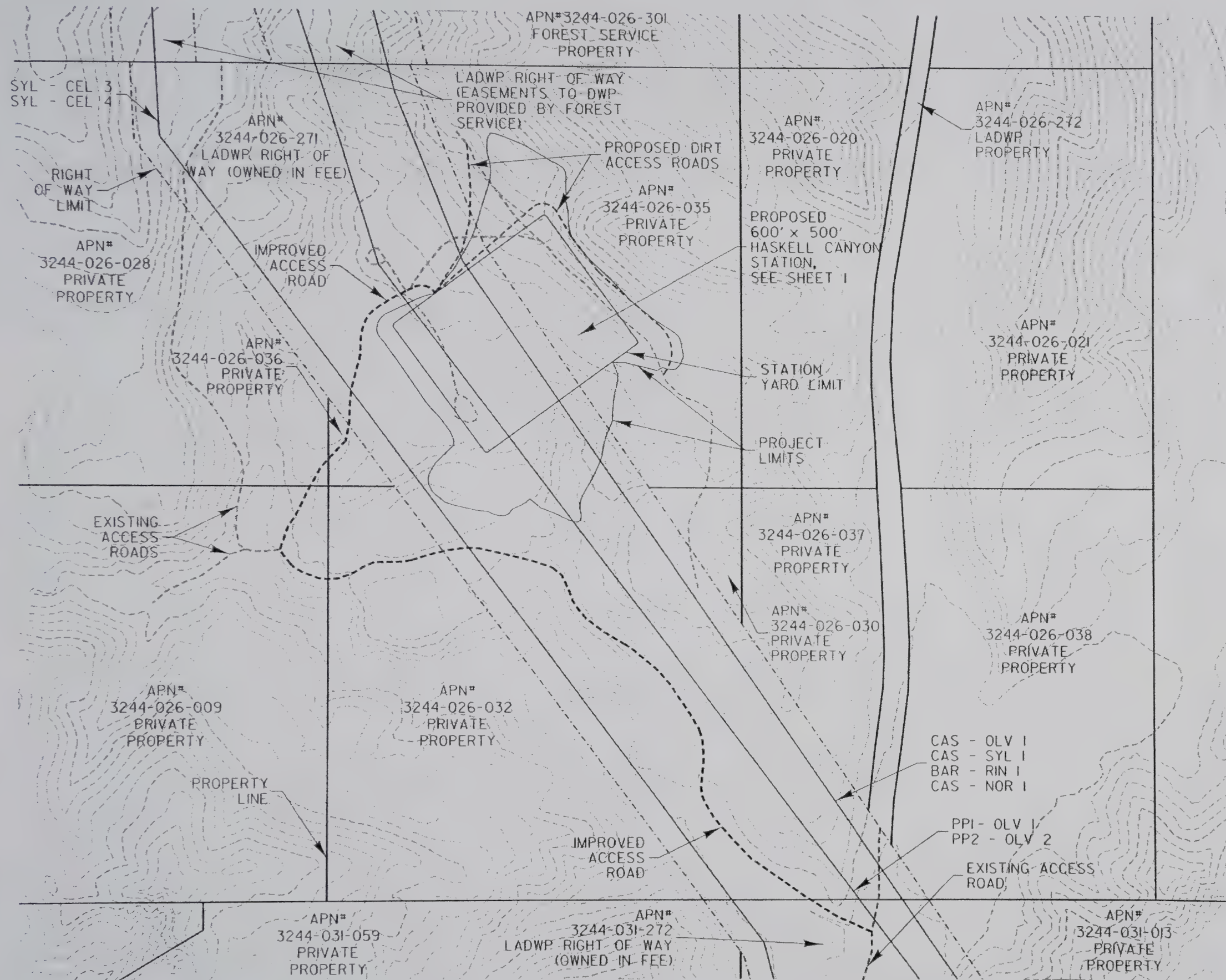
SHT 2 OF 2

PART NO.	PARTS LIST DESCRIPTION
1	PCB, 230KV, 3000A, 48KA, SF6
2	
3	
4	SW, DISC, 230KV, 3000A, 3P W/ DND
5	SW, DISC, 230KV, 3000A, 3P
6	
7	
8	XFMR, COUPLING CAP VOLTAGE, 230KV-115V, (3)
9	
10	CABLE, ALUMINUM, 2500KCMIL, BARE
11	CABLE, ALUMINUM, 1272KCMIL, BARE, ACS/AN
12	
13	BUS, PIPE, AL, 3" IPS
14	
15	
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17	
18	
19	
20	



NOTE:
 1. CONTROL AND OPERATING VOLTAGE: 125VDC.
 2. SUPERVISORY VOLTAGE: 125VDC.

RELAY AND METERING SCHEMATIC EA2		Revision Number 1 DESCRIPTION 1. REV RATING OF PCB PT 1 & BUS SIZE PI DRAFTING RELEASE DRAWN BY J B IONACIO CHECKED BY ENGINEERING APPROVAL		DRAFTING APPROVAL DRAFTING RELEASE APPROVAL DRAFTING RELEASE APPROVAL DRAFTING RELEASE APPROVAL		SCALE: (UNLESS NOTED) NONE DRAFTING RELEASE DRAWN BY: ROSEAN MADRILL/B CHECKED BY: H. MORAN ENGINEERING APPROVAL		ONE LINE DIAGRAM BARREN RIDGE SWITCHING STATION POWER SYSTEM DEPARTMENT OF WATER AND POWER CITY OF LOS ANGELES DRAWING NUMBER J43-EA1	
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PRELIMINARY IMPROVED ACCESS ROAD SUMMARY:

ROAD LENGTH	3,800 FT
ROAD WIDTH	
EXISTING	14 FT
PROPOSED	22 FT
MAXIMUM SLOPE	15 %
MINIMUM CENTERLINE RADIUS OF CURVES	80 FT

NOTES:

THE ALIGNMENT OF THE PROPOSED PAVED ACCESS ROAD FOLLOWS THAT OF THE EXISTING PATROL ROAD.

THE EXISTING ACCESS ROAD WILL NEED TO BE WIDENED AND PAVED TO ALLOW SERVICE VEHICLES ACCESS TO THE PROPOSED STATION. WIDENING THE ROAD WILL REQUIRE ADDITIONAL GRADING AND EARTHWORK.

THE PROPOSED ACCESS ROAD MAY BE SUBJECT TO THE APPROVAL THE LOS ANGELES COUNTY FIRE DEPARTMENT.

THE EARTHWORK QUANTITIES AND CONSTRUCTION COST ESTIMATES LISTED ON SHEET I DOES NOT INCLUDE THE CONSTRUCTION OF THE IMPROVED ACCESS ROAD.

IN THIS ALTERNATIVE, THE PROPOSED STATION EXTENDS INTO PRIVATE PROPERTY. RIGHTS TO THIS PRIVATE PROPERTY MUST BE ACQUIRED BY LADWP.

PLEASE NOTE THAT THIS DESIGN IS PRELIMINARY. THE TOPOGRAPHY, PROPERTY LINES, PROJECT LIMITS AND DESIGN VARIABLES ARE APPROXIMATE AND THUS SUBJECT TO CHANGE. A NUMBER OF REMAINING ENGINEERING AND ENVIRONMENTAL ISSUES MUST STILL BE RESOLVED. THIS EXHIBIT, AND CORRESPONDING CONSTRUCTION COST ESTIMATE, ARE FOR PRELIMINARY SITE EVALUATION PURPOSES ONLY.

PRELIMINARY PRINT
NOT FOR CONSTRUCTION

SCALE:
UNLESS NOTED: 1" = 160'

DES. ENGR.
JORDAN JARRETT

DWG. DATE:
12-16-09

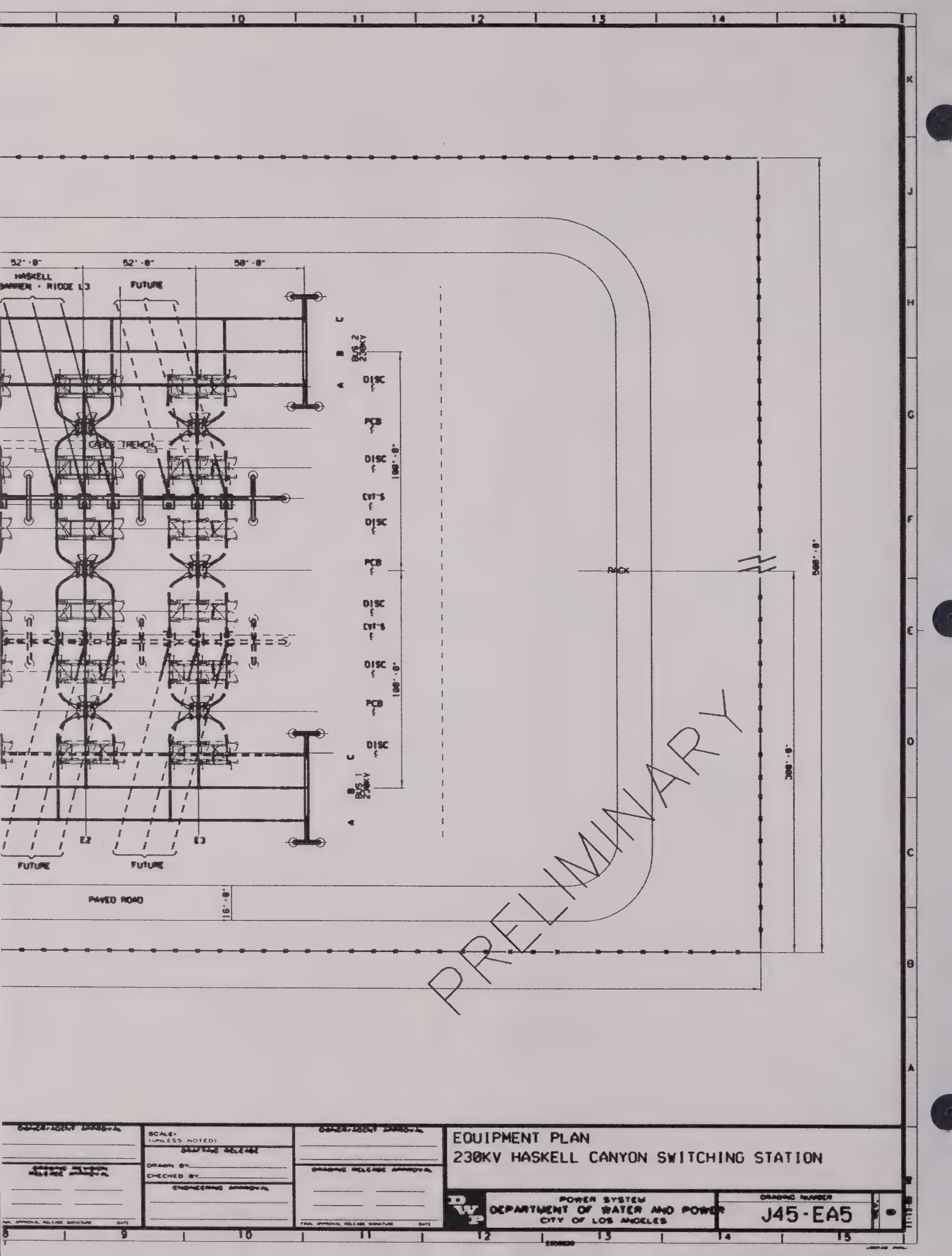
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OPTIMAL TRANSMISSION ENGINEERING STATION ALIGNMENT
HASKELL CANYON SWITCHING STATION

DWP

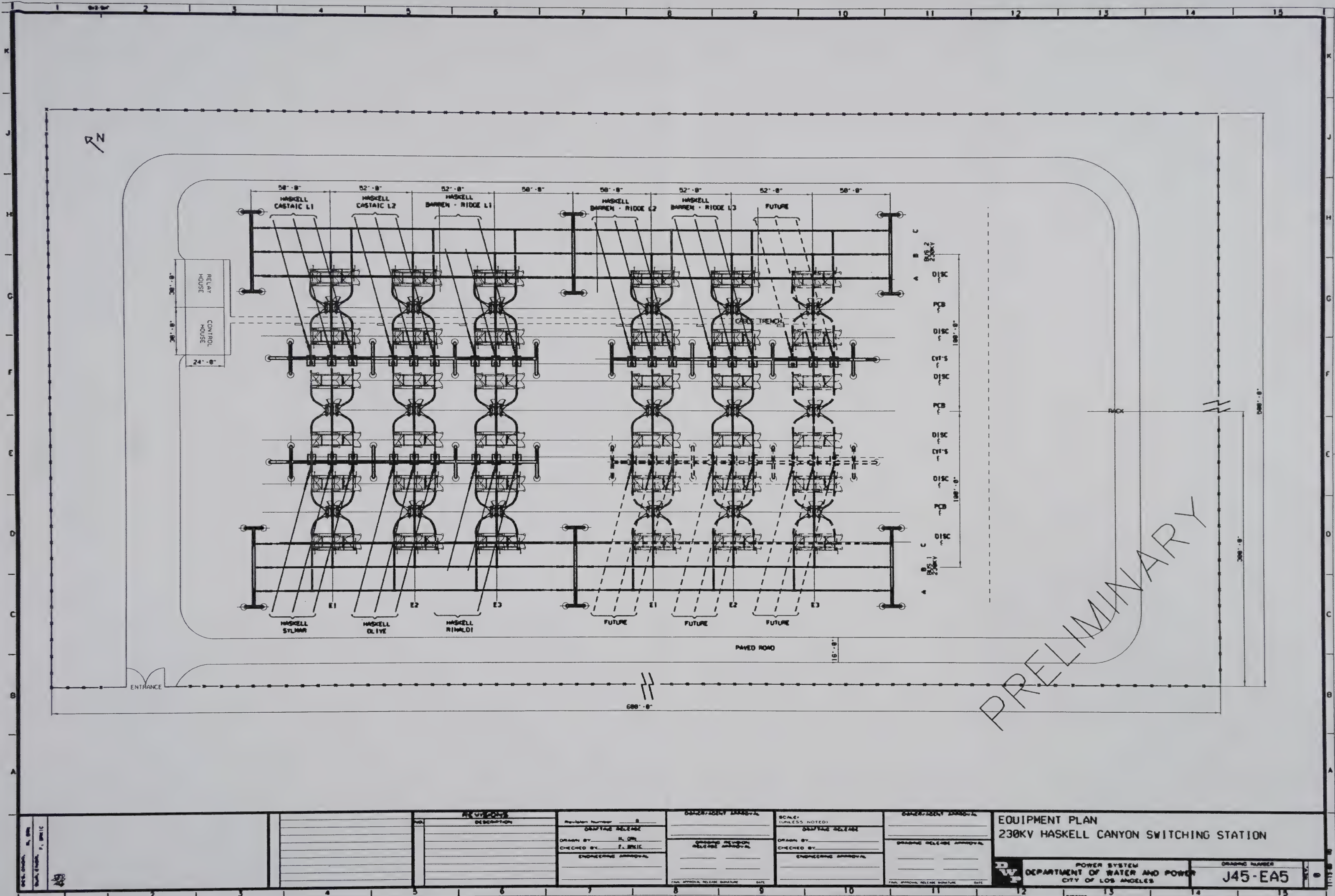
POWER SYSTEM
DEPARTMENT OF WATER AND POWER
CITY OF LOS ANGELES

DRAWING NUMBER

SHT 2 OF 2



DATE: 11/13/88		SCALE: (UNLESS NOTED) AS SHOWN		DESIGNER: [Signature]		EQUIPMENT PLAN 230KV HASKELL CANYON SWITCHING STATION	
DRAWING NUMBER J45-EA5		DRAWING RELEASE APPROVAL [Signature]		POWER SYSTEM DEPARTMENT OF WATER AND POWER CITY OF LOS ANGELES		DRAWING NUMBER J45-EA5	
APPROVAL, RELEASE SIGNATURE [Signature]		DATE 11/13/88		APPROVAL, RELEASE SIGNATURE [Signature]		DATE 11/13/88	



REVISIONS	Revision Number	8
	DATE	05/14/88
	BY	H. JEN
	CHECKED BY	F. BRICK
DESIGN/REVISION APPROVAL	DESIGN/REVISION APPROVAL	
	DESIGN/REVISION APPROVAL	
	DESIGN/REVISION APPROVAL	
	DESIGN/REVISION APPROVAL	
ENGINEERING APPROVAL	ENGINEERING APPROVAL	
	ENGINEERING APPROVAL	
	ENGINEERING APPROVAL	
	ENGINEERING APPROVAL	
SCALE: UNLESS NOTED: 0.5" = 1'-0"	SCALE: UNLESS NOTED: 0.5" = 1'-0"	
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	SCALE: UNLESS NOTED: 0.5" = 1'-0"	
OWNER/AGENCY APPROVAL	OWNER/AGENCY APPROVAL	
	OWNER/AGENCY APPROVAL	
	OWNER/AGENCY APPROVAL	
	OWNER/AGENCY APPROVAL	

EQUIPMENT PLAN 230KV HASKELL CANYON SWITCHING STATION	
POWER SYSTEM DEPARTMENT OF WATER AND POWER CITY OF LOS ANGELES	DRAWING NUMBER J45-EA5

APPENDIX D: REGULATORY FRAMEWORK

D.1 INTRODUCTION

The following Appendix discusses applicable regulations, plans, and standards associated with the Proposed Action/Project and Alternatives. Regulations, plans, and standards (including policies) common to the resources is provided in the first section, followed by resource specific regulations, plans, and guidelines in the sections that follow. This appendix is organized in a similar order to Chapter 3.

D.2 COMMON TO ALL RESOURCES

D.2.1 FEDERAL

Forest Service Manual

The Forest Service Manual Section 2700 (Special Uses Management) provides direction for the administration of special-use authorizations (SUAs) on NFS lands (USFS 1997). As described in Section 2703.2, the USFS is instructed to deny a written request for the use of NFS lands according to the following criteria:

- The proposal is inconsistent with Forest land and resource management plans;
- The proposal is in conflict with other Forest management objectives, or applicable federal statutes and regulations; or
- The proposal can be reasonably accommodated on non-NFS lands provided, however, that First Amendment group uses (freedom of assembly and worship) may not be denied on this basis.

The USFS may not authorize the use of NFS lands just because it affords the applicant a lower cost and less restrictive location when compared with non-NFS lands (USFS 1997).

However, additional guidance regarding the management of special uses, such as transmission lines across NFS lands, has been provided in the Forest Service Manual Region 5 Supplement No. 2700-92-8 (USFS 1992). As stated in Section 2726.43 of the supplement, the objectives for the management of transmission lines include the following:

- To eliminate or mitigate long-term conflicts between power lines and the management of NFS lands and resources; and
- To eliminate identified fire and safety hazards.

According to the direction provided in Section 2726.43 for the construction of transmission lines over 35 kV, aerial construction of transmission line structures (as opposed to underground construction) may be authorized, except in those areas where the environmental analysis clearly indicates unacceptable effects on NFS resource and environmental values (USFS 1992). This supplement recognizes that construction costs and operational problems increase substantially for underground construction of transmission lines over 35 kV, and states that the authorizing officer would consider undergrounding only after a thorough assessment of the situation.

Angeles National Forest Land Management Plan

The National Forest Management Act of 1976 (NFMA) required the USFS to develop and implement plans for the efficient and sustainable use of the many resources found on NFS lands, and required that these plans be developed through an open public process.

The 2005 Forest Plan was approved through a Record of Decision signed April 3, 2006.

The Forest Plan consists of three parts that examine vision, strategy, and design criteria for the ANF. Part 1 of the Forest Plan provides a “vision” of the ANF as serving as an open space, visual backdrop, recreation destination, and natural environment for a diverse urban population. Part 1 additionally includes a discussion of forest goals and desired conditions for resources, which are linked to the Forest Service National Strategic Plan. The following is a list of goals that pertain to the development of the Proposed Action and Alternatives across NFS lands.

National Strategic Plan Goal 4 – Help meet energy resource needs. Consider opportunities for energy development and the supporting infrastructure on forests and grasslands to help meet the nation’s energy needs:

- Work with other agencies to identify and designate corridors for energy facilities, improve permit application processing efficiency, and establish appropriate land tenure (including transferability clauses) in easements and other authorizations to provide for long-term project viability.

Forest Goal 4.1b. Administer Renewable Energy Resource developments while protecting ecosystem health.

Forest Goal 7.1. Retain natural areas as a core for a regional network while focusing the built environment into the minimum land area needed to support growing public needs.

Part 2 of the Forest Plan includes the ANF program emphasis and objectives and strategic management direction, which allow the USFS to make progress towards its vision presented in Part 1 of the Forest Plan. Within the strategic management direction, land use zones are designated to show allowable uses and opportunities. Land use zones within the study corridors are presented in Table D-1. Special use permit proposals are “suitable if they are consistent, or can be made consistent through mitigation and design factors, with the applicable Forest Plan (2005 Angeles National Forest Land Management Plan) standards.”

TABLE D-1. ANGELES NATIONAL FOREST SUITABLE COMMODITY AND COMMERCIAL USES

Land Use Zone	Developed Area Interface (DAI)	Back Country (BC)	Back Country Motorized Use Restricted (BCMUR)	Back Country Non-Motorized (BCNM)	Critical Biological (CB)
Activity or Use					
(Non-Rec) Special Use Low Intensity	Suitable	Suitable	Suitable	By Exception*	By Exception*
Major Utility Corridor	Designated Areas	Designated Areas	Designated Areas	Not Suitable	Not Suitable
Road Construction or Reconstruction	Suitable	Suitable	Suitable for Authorized Use	Not Suitable	Not Suitable
Developed Facilities	Suitable	Suitable	By Exception*	Not Suitable	Not Suitable

* Conditions which are not generally compatible with the land use zone but may be appropriate under certain circumstances.

These land use zones will be managed as follows:

- DAI – motorized public access
- BC – motorized public access on designated roads and trails
- BCMUR – non-motorized (mechanized, equestrian, and pedestrian) public access. Motorized use is restricted to administrative purposes only that include USFS, other agency, or tribal government needs, as well as access needed to private land or authorized special-uses.

- BCNM – non-motorized uses that include mechanized, equestrian and pedestrian public access. Administrative access (usually for community protection) is allowed by exception for emergency situations and for short duration management purposes (such as fuel treatment).
- CB – limit the level of human development for protection of species-at-risk.

In addition, Part 2 contains a set of special designation overlays (Wild and Scenic Rivers, Inventoried Roadless Areas, Research Natural Areas, Special Interest Areas, Other Designations) which identify suitable land uses within each land use zone of the ANF. When differences between the suitable uses of the land use zones and special designation overlays occur, the more restrictive set of allowable uses apply.

Part 2 of the Forest Plan also subdivided the ANF into a series of geographical units called “Places”. Each Place has its own “landscape character” and has a theme, setting, desired condition and program emphasis.

Part 2 further describes the trends and expectations, as well as anticipated resource improvements planned over the next three to five years. The program emphasis and objectives for non-recreation special uses is to manage infrastructure needs to support communities while preserving open space and natural settings. Special uses are authorized only when they cannot be reasonably accommodated on non-NFS lands. Maintaining open space is given priority over accommodating urban needs.

Part 2, Appendix B, of the 2005 Forest Plan includes a list of program strategies that the ANF may choose to emphasize to progress toward achieving the desired conditions and goals of the Forest Plan.

Part 3 of the Forest Plan provides the management and design criteria that the USFS is directed to implement to achieve the vision of the ANF, as outlined in Part 1 of the Forest Plan. The NFMA requires that these standards are mandatory and must be met or a project-specific plan amendment must be included with the project. As opposed to the ANF-specific design criteria in Part 2, these standards are common to all four Southern California forests. They include management standards for vegetation; aesthetics; fish and wildlife; soil, water, riparian and heritage resources; wild and scenic rivers; cultural and historic resources; geographic Places; other design criteria; and monitoring.

California Desert Conservation Area Plan

The California Desert Conservation Area (CDCA) Plan (1980, as amended) is a comprehensive, long-range plan with goals and specific actions for the management, use, development, and protection of the resources and public lands within the CDCA, and it is based on the concepts of multiple use, sustained yield, and maintenance of environmental quality.

The CDCA Plan assigns a “multiple use class” designation to public lands according to the allowable level of multiple use, as follows:

- Class C (Controlled Use) designation is the most restrictive, and is assigned to wilderness with minimal levels of multiple use.
- Class L (Limited Use) lands are managed to provide lower-intensity, carefully controlled multiple use of resources, while ensuring that sensitive values are not significantly diminished.
- Class M (Moderate Use) lands are managed to provide for a wider variety of uses such as mining, livestock grazing, recreation, utilities, and energy development, while conserving desert resources and mitigating damages permitted uses may cause.
- Class I (Intensive Use) provides for concentrated uses of lands and resources to meet human needs.

- Class U (Unclassified) lands are scattered and isolated parcels of public land in the CDCA which have not been placed within multiple-use classes. These parcels will be managed on a case-by-case basis, as explained in the Land Tenure Adjustment Element.

The Plan's goals and actions for each resource are established in its 12 elements. Each of the Plan elements provides both a desert-wide perspective of the planning decisions for one major resource or issue of public concern as well as more specific interpretation of multiple-use class guidelines for a given resource and its associated activities.

The CDCA Plan designates 16 major Energy Production and Utility Corridors (CDCA Plan 1993) as a guide to consolidate compatible rights-of-way, avoid sensitive resources wherever possible, complete the delivery-systems network, consider ongoing projects for which decisions have been made, and to consider corridor networks that take into account power needs and alternative fuel resources. The scope of the CDCA Plan allows the designation of corridors that address the following types of utility facilities: (1) New electrical transmission towers and cables of 161 kV or above; (2) All pipelines with diameters greater than 12 inches, coaxial cables for interstate communications; (3) Major aqueducts or canals for inter-basin transfers. The Plan calls for these corridors to be designed to provide a two-mile standard for separation of existing facilities and to accommodate flexibility in the selection of alternative routes for a right-of-way.

West Mojave Plan

The West Mojave Plan is a habitat conservation plan and amendment to the BLM CDCA Plan covering more than nine million acres in five counties (Inyo, Kern, Los Angeles, San Bernardino, and Riverside) with the purpose of creating a comprehensive strategy to conserve and protect the desert tortoise (*Gopherus agassizii*), the Mohave ground squirrel (*Spermophilus mohavensis*), and almost 100 other sensitive species, along with the natural communities where they reside. The West Mojave Plan includes the establishment of new Areas of Critical Environmental Concern (ACEC), ACEC boundary amendments, multiple use class changes, a management plan, and other general amendments to the existing CDCA Plan.

D.2.2 REGIONAL/LOCAL

Southern California Association of Governments

The Southern California Association of Governments (SCAG) is a regional council of governments that serves as the Metropolitan Planning Organization for Imperial, Los Angeles, Orange, Riverside, San Bernardino, and Ventura Counties. SCAG serves as a forum for regional issues relating to transportation, the economy and community development, and the environment.

SCAG is responsible for developing transportation, land use, and energy conservation measures that improve quality of life. The SCAG Regional Comprehensive Plan and Guide is a compilation of the summaries of plans for the Southern California region, which includes the counties mentioned above. The plan consists of the following sections: the Core Chapters (i.e., Growth Management, Regional Mobility, Air Quality, Water Quality, and Hazardous Waste Management) include the federal and State requirements placed on SCAG in addition to non-binding advisory materials and guidance; the Ancillary Chapters (i.e., Economy, Housing, Human Resources and Services, Public Finance, Open Space and Conservation, Water Resources, Energy, and Integrated Waste Management) reflect other regional plans, but do not contain actions or policies that are required of local governments.

Local Land Use Plans

The counties and cities have adopted general plans as required by the State (Government Code Section 65300 *et seq.*) to guide local decision-making regarding future land uses, growth, and other local decisions relating to circulation systems, public open space, and public facilities (including schools and libraries). In addition to general plans, the State requires counties and cities to adopt a local zoning ordinance (Government Code Section 65800 *et seq.*) to implement their general plan through development standards and regulations. Zoning ordinances enumerate uses permitted by right or are subject to the approval of a land use review process within each district. Most ordinances also possess a means to grant discretionary permits, provided certain conditions are met. These discretionary permits are often referred to as Conditional Use Permits (CUP) or Special Use Permits (SUP).

For the purposes of this analysis, the following city- and county-based General Plans were considered:

- Kern County
- Los Angeles County
- City of Lancaster
- City of Los Angeles
- City of Palmdale
- City of San Fernando
- City of Santa Clarita

Kern County General Plan

The Kern County General Plan identifies the goals, policies, and implementation measures that are applicable to the unincorporated areas within the county. The Kern County General Plan was updated on June 15, 2004. The latest version is dated September 22, 2009. Its purpose is to give long-range guidance to county officials making decisions affecting the growth and resources of unincorporated Kern County.

Los Angeles County General Plan

The Los Angeles County General Plan (Adopted 1980) is the guide for growth and development on a County-wide level in unincorporated Los Angeles County. More specifically, the Proposed Action and Alternatives fall within the County's Santa Clarita Valley Area and Antelope Valley Areawide Plans. Both the Santa Clarita Valley Area Plan (Adopted 1990) and the Antelope Valley Areawide Plan (Adopted 1986) serve as extensions of the General Plan to reflect local needs. Area plans are used for large, continuous areas of the County and allow for comprehensive and detailed planning, as well as for planning in coordination with adjacent cities.

Los Angeles County is in the process of completing its first comprehensive General Plan Update since 1980. Efforts are also underway to update the Antelope Valley Area Plan and the Santa Clarita Valley Area Plan, a joint collaboration with the City of Santa Clarita called *One Valley One Vision*.

City of Lancaster General Plan 2030

The City of Lancaster General Plan 2030 (2009) establishes local policy for the City of Lancaster and also considers the City's sphere of influence. The General Plan is a policy statement to guide future growth. It presents the issues which face the City of Lancaster as well as the goals, objectives, policies, and specific actions which the City will pursue to resolve those issues. The Lancaster General Plan establishes the year 2030 as the benchmark date for the implementation of general plan policy.

City of Los Angeles General Plan

The City of Los Angeles General Plan (Plan), updated in part in 2001, is a comprehensive, long-range declaration of purposes, policies and programs for the development of the City. The Plan is a dynamic document consisting of 11 elements: ten Citywide elements (Air Quality Element, Conservation Element, Historic Preservation and Cultural Resources Element, Housing Element, Infrastructure Systems Element, Noise Element, Open Space Element, Public Facilities and Services Element, Safety Element, and Transportation Element) and the Land Use Element, which provides individual plans for each of the City's 35 Community Planning Areas. The Plan Framework, adopted in December 1996 and updated in August 2001, provides current general guidance on land use issues for the entire City.

City of Palmdale General Plan

The City of Palmdale General Plan (1993) establishes local policies for the City of Palmdale that consider regional issues pertaining to transportation, housing, open space, infrastructure, coordination of emergency services, and other physical, social, and economic concerns. The City has incorporated a number of recent developments into its planning boundaries, which include Ritter Ranch and the Anaverde Ranch development (originally entitled City Ranch). Specific Plan EIRs were prepared for both the Ritter Ranch and the Anaverde Ranch (City Ranch) projects, and the City Ranch Specific Plan (for the Anaverde Ranch development) was issued in May 1992. While a separate specific plan document was not issued for the Ritter Ranch development, the Ritter Ranch Specific Plan was incorporated into the City of Palmdale General Plan. As such, the policies presented in the City of Palmdale General Plan are applicable to the Ritter Ranch specific plan area.

Ritter Ranch Specific Plan

The Ritter Ranch Specific Plan was prepared to establish a site-specific framework for the Ritter Ranch development (City of Palmdale 1992). The development encompasses 10,625 acres of land area and consists of a mix of residential, open space, public facility, recreational, school and commercial land uses. The goals, policies, and design guidelines have been developed consistent with the goals and policies of the City of Palmdale General Plan, and have been incorporated into the city's general plan elements.

City Ranch Specific Plan

The City Ranch Specific Plan was prepared to establish a site-specific framework for the Anaverde Ranch development (City of Palmdale 1992). The development covers 1,985 acres of land area and consists of a mix of residential, commercial, golf course, recreational, open space and community facility uses. The goals, policies, and design guidelines have been developed consistent with the goals and policies of the City of Palmdale General Plan, and have been incorporated into the city's general plan elements.

City of San Fernando General Plan

The City of San Fernando General Plan (1987) provides comprehensive planning for the future of the City. The San Fernando General Plan includes the seven mandated elements required by State planning law within six chapters, consistent with the General Plan Guidelines, which allow elements of similar topics to be combined. Specifically, the San Fernando General Plan comprises the following elements: Land Use, Circulation, Housing (2000), Open Space/Conservation/Parks, Safety, and Noise.

City of Santa Clarita General Plan

The City of Santa Clarita General Plan (1991) is designed to manage growth decisions within the City of Santa Clarita through the incorporation of goals, policies, and implementation actions. Each of the 12 elements that constitute the General Plan has been updated when appropriate to adequately address recent growth within the City.

Regulations, plans, and standards (including policies) specific to each resource are provided below.

D.3 AIR QUALITY

D.3.1 FEDERAL

Federal Clean Air Act. The EPA is responsible for enforcing the Federal CAA of 1970 and its 1977 and 1990 Amendments. As discussed above, the EPA classifies areas as “attainment,” “nonattainment,” or “unclassified” depending on whether ambient air quality data collected in the area indicate that the area shows compliance with the NAAQS. The attainment status of the air basins in which the BR RTP is located is presented in Chapter 3, Table 3.2.1-1.

Areas which the EPA has classified as nonattainment areas for criteria pollutants are required to prepare and implement a State Implementation Plan (SIP). The California Air Resources Board (ARB) is the responsible agency for compiling and adopting the California SIPs. The SIP identifies and quantifies sources of emissions and presents a comprehensive strategy to control and reduce locally generated emissions. The SIP also includes an attainment demonstration which shows (generally through modeling) that the proposed combination of existing sources and the proposed actions will result in meeting attainment by the prescribed deadline.

Federal Emission Standards. The EPA has also adopted on-road and off-road engine emission reduction requirements, including Federal Exhaust and Evaporative Emission Standards for Light-Duty Vehicles and Light-Duty Trucks, Federal Emission Standards for Heavy-Duty and Non-road Engines, and other emission control programs that affect the Project’s potential impacts to air quality through the phase-in of clean fuel and engine requirements.

General Conformity Rule. The General Conformity Rule requires that federal agencies demonstrate that federal actions conform with the applicable SIP in order to ensure that federal activities do not hamper local efforts to control air pollution. The EPA general conformity rule applies to federal actions occurring in nonattainment or maintenance areas when the total direct and indirect emissions of nonattainment pollutants (or their precursors) exceed specified thresholds. The *de minimis* emission thresholds are based on the attainment status of each air basin. Table D-2 below identifies the federal nonattainment pollutants and the relevant *de minimis* emission thresholds.

TABLE D-2. DE MINIMIS LEVELS FOR DETERMINATION OF APPLICABILITY OF GENERAL CONFORMITY RULE (TONS/YEAR)

Air Basin	CO	NO _x	ROG	PM ₁₀	PM _{2.5}
MDAB	N/A	25	25	N/A	N/A
SCAB ¹	100	10	10	70	100

Compliance with the conformity rule can be demonstrated in several ways. Compliance is presumed if the net increase in direct and indirect emissions from a federal action would be less than the relevant *de minimis* level. The Proposed Action must also demonstrate that its net emission increase is not regionally significant, where “regionally significant” is defined as ten percent of basin-wide emissions. If net emissions exceed the relevant *de minimis* value, or if a project is regionally significant, a formal conformity determination process must be followed.

¹ SCAB has applied for redesignation as a CO attainment area; however, it is still considered a maintenance area and is subject to the requirements of the General Conformity Rule for CO

Global Climate Change Regulations.

On April 17, 2009, the EPA issued its proposed endangerment finding for GHG emissions. On December 7, 2009, the EPA Administrator signed two distinct findings regarding greenhouse gases under section 202(a) of the Clean Air Act:

Endangerment Finding: The Administrator finds that the current and projected concentrations of the six key well-mixed greenhouse gases—carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF₆)—in the atmosphere threaten the public health and welfare of current and future generations.

Cause or Contribute Finding: The Administrator finds that the combined emissions of these well-mixed greenhouse gases from new motor vehicles and new motor vehicle engines contribute to the greenhouse gas pollution which threatens public health and welfare.

D.3.2 STATE

The California Ambient Air Quality Standards (CAAQS) identify the State emission thresholds for criteria pollutants. The CAAQS for criteria pollutants are more stringent than the NAAQS. Additionally, as part of the CAAQS, ARB has established standards for sulfates, visibility, hydrogen sulfide, and vinyl chloride. Table D-3 below presents the NAAQS and CAAQS.

TABLE D-3. AMBIENT AIR QUALITY STANDARDS

POLLUTANT	AVERAGE TIME	CALIFORNIA STANDARDS		NATIONAL STANDARDS		
		Concentration	Measurement Method	Primary	Secondary	Measurement Method
Ozone (O ₃)	1 hour	0.09 ppm (180 µg/m ³)	Ultraviolet Photometry			Ethylene Chemiluminescence
	8 hour	--		0.075 ppm (147 µg/m ³)	0.075 ppm (147 µg/m ³)	
Carbon Monoxide (CO)	8 hours	9.0 ppm (10 mg/m ³)	Non-Dispersive Infrared Spectroscopy (NDIR)	9 ppm (10 mg/m ³)	--	Non-Dispersive Infrared Spectroscopy (NDIR)
	1 hour	20 ppm (23 mg/m ³)		35 ppm (40 mg/m ³)		
Nitrogen Dioxide (NO ₂)	Annual Average	0.030 ppm (56 µg/m ³)	Gas Phase Chemiluminescence	0.053 ppm (100 µg/m ³)	0.053 ppm (100 µg/m ³)	Gas Phase Chemiluminescence
	1 hour	0.18 ppm (337 µg/m ³)		0.100 ppm (188 µg/m ³)	--	
Sulfur Dioxide (SO ₂)	24 hours	0.04 ppm (105 µg/m ³)	Ultraviolet Fluorescence			Pararosaniline
	3 hours	--		--	0.5 ppm (1300 µg/m ³)	
	1 hour	0.25 ppm (655 µg/m ³)		0.075 ppm (196 µg/m ³)	--	
Respirable Particulate Matter (PM ₁₀)	24 hours	50 µg/m ³	Gravimetric or Beta Attenuation	150 µg/m ³	150 µg/m ³	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m ³		--	--	

POLLUTANT	AVERAGE TIME	CALIFORNIA STANDARDS		NATIONAL STANDARDS		
		Concentration	Measurement Method	Primary	Secondary	Measurement Method
Fine Particulate Matter (PM _{2.5})	Annual Arithmetic Mean	12 µg/m ³	Gravimetric or Beta Attenuation	15 µg/m ³	--	Inertial Separation and Gravimetric Analysis
	24 hours	--		35 µg/m ³	--	
Sulfates	24 hours	25 µg/m ³	Ion Chromatography	--	--	--
Lead (Pb)	30-day Average	1.5 µg/m ³	Atomic Absorption	--	--	Atomic Absorption
	Calendar Quarter	--		1.5 µg/m ³	1.5 µg/m ³	
	3-month Rolling Average	--		0.15 µg/m ³	0.15 µg/m ³	
Hydrogen Sulfide (H ₂ S)	1 hour	0.03 ppm (42 µg/m ³)	Ultraviolet Fluorescence	--	--	--
Vinyl Chloride	24 hours	0.010 ppm (26 µg/m ³)	Gas Chromatography	--	--	--

ppm= parts per million

µg/m³ = micrograms per cubic meter

mg/m³= milligrams per cubic meter

Source: California Air Resources Board 2009

ARB is also responsible for regulating mobile source emissions within California and has adopted on-road and off-road emission reduction programs that indirectly affect the Project's emissions through the phase-in of increasingly stringent engine emission standards and clean fuels requirements. A summary of the State air quality regulations that apply to the BRRTP is presented in the Air Quality Technical Report.

In addition to regulating air quality, the State of California has enacted legislation to regulate GHG emissions, and to require evaluation of potential global climate change impacts. A detailed discussion of these regulations is presented in the Air Quality Technical Report. Global climate change regulations include the following:

- Assembly Bill 32, the California Global Warming Solutions Act of 2006
- Senate Bill 97, which amends CEQA regulations to require analysis of potential global climate change impacts
- Executive Order S-3-05, which calls for a reduction in GHG emissions in accordance with a schedule developed by the State
- California Code of Regulations Title 24, which sets forth energy efficiency standards for buildings
- State Standards Addressing Vehicular Emissions, including the Pavley standards to reduce tailpipe greenhouse gas emissions, and the Low Carbon Fuel Standard

D.3.3 REGIONAL/LOCAL

It is the responsibility of the local air districts to ensure that State and federal ambient air quality standards are achieved and maintained in the area under their jurisdiction. The Proposed Action and Alternatives are routed through areas under the jurisdiction of three separate air districts: the SCAQMD,

the AVAQMD, and the KCAPCD. Each of the local air districts has adopted rules and regulations that regulate visible emissions, nuisance emissions, and fugitive dust emissions. These rules will apply to the Proposed Action and Alternatives during construction. Specific regulations that apply to the Proposed Action and Alternatives are discussed in the Air Quality Technical Report, and listed below.

AVAQMD

- AVAQMD Rule 401 – Visible Emissions
- AVAQMD Rule 402 – Nuisance
- AVAQMD Rule 403 – Fugitive Dust

KCAPCD

- KCAPCD Rule 401 – Visible Emissions
- KCAPCD Rule 402 – Fugitive Dust

SCAQMD

- SCAQMD Rule 401 – Visible Emissions
- SCAQMD Rule 402 – Nuisance
- SCAQMD Rule 403 – Fugitive Dust

The USFS regulates the portion of the Proposed Action that would be located within the Angeles National Forest (ANF), and the USFS has prepared a Land Management Plan (Forest Plan) for the ANF (USFS 2005). The ANF Plan Strategy does not include any air quality strategies that would be significantly impacted by the construction or operation of the Proposed Action and Alternatives. The ANF air quality strategies are limited to the following:

- AIR 1: Minimize Smoke and Dust
- AIR 2: Forest Air Quality Emissions

The ANF strategy AIR 1 is very general and is directed to “Control and reduce fugitive dust to protect human health, improve safety and moderate or eliminate environmental impacts.” The only action item of this of this strategy is to “Incorporate visibility requirements into project plans.” The ANF air quality strategy AIR 2 relates to providing an air quality inventory for prescribed burns and wildfires and therefore does not directly relate to the Proposed Action and Alternatives’ construction and operation emissions.

D.4 NOISE

D.4.1 FEDERAL

Currently, there are no audible noise control regulations that are specifically concerned with audible noise from power facilities. In the United States, the Environmental Protection Agency (EPA) has published guidelines relating to AN in general (“Information on levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety,” NTIS 550\9-74-004). This document recommends that the L_{dn} be limited to 55 dB(A) outdoors and 45 dB(A) indoors (L_{dn} and dB(A) noise classifications are defined above).

D.4.2 STATE

California Government Code

California Government Code Section 65302(f) mandates that the legislative body of each county and city adopt a noise element as part of their comprehensive general plan. The local noise element must recognize the land use compatibility guidelines established by the State Department of Health Services as shown in Table D-4, Land Use Compatibility for Community Noise Environments.

The guidelines rank noise land use compatibility in terms of “normally acceptable,” “conditionally acceptable,” and “clearly unacceptable” noise levels for various land use types. Single-family homes are “normally acceptable” in exterior noise environments up to 60 CNEL and “conditionally acceptable” up to 70 CNEL. Multiple-family residential uses are “normally acceptable” up to 65 CNEL and “conditionally acceptable” up to 70 CNEL. Schools, libraries, and churches are “normally acceptable” up to 70 CNEL, as are office buildings and business, commercial, and professional uses.

TABLE D-4. LAND USE COMPATIBILITY FOR COMMUNITY NOISE ENVIRONMENT

Land Use Category	Community Noise Exposure – Ldn or CNEL (dB)													
	50		55		60		65		70		75		80	
Residential Low Density, Single Family, Duplex, Mobile Home	A	A	A	A	A									
				B	B	B	B	B	B					
										C	C			
												D	D	D
Residential – Multi-Family	A	A	A	A	A	A	A							
						B	B	B	B					
										C	C			
												D	D	D
Transient Lodging -Motel, Hotel	A	A	A	A	A									
						B	B	B	B	B	B			
												C	C	
														D
Schools, Libraries, Churches, hospitals, Nursing Homes	A	A	A	A	A									
						B	B	B	B					
										C	C	C	C	
														D
	B	B	B	B	B	B	B	B	B					
Sports Arena, Outdoor Spectator Sports														
	A	A	A	A	A									
	B	B	B	B	B	B	B	B	B	B	B			
Playgrounds, Neighborhood Parks														
										C	C	C		
												D	D	D
Golf Courses, Riding Stables, Water Recreation, Cemeteries	A	A	A	A	A	A	A	A	A	A	A			
											C	C	C	
														D

Land Use Category	Community Noise Exposure – Ldn or CNEL (dB)											
	50		55		60		65		70		75	
Office Buildings, Business, Commercial and Professional	A	A	A	A	A	A	A	A	A			
									C	C	C	C
											D	D
Industrial, Manufacturing, Utilities, Agriculture	A	A	A	A	A	A	A	A	A	A		
										C	C	C
											D	D
A	Normally Acceptable: Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.											
B	Conditionally Acceptable: New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features are included in the design.											
C	Normally Unacceptable: New construction or development should be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirement must be made and needed noise insulation features included in the design.											
D	Clearly Unacceptable: New construction or development generally should not be undertaken.											

D.4.3 REGIONAL/LOCAL

Kern County

The Noise Control section for Kern County, California, Code of Ordinances (Title 8 – Health and Safety, Chapter 8.36) states the following:

It is unlawful for any person to do, or cause to be done, any of the following acts within the unincorporated areas of the county:

H. To create noise from construction, between the hours of nine (9:00) p.m. and six (6:00) a.m. on weekdays and nine (9:00) p.m. and eight (8:00) a.m. on weekends, which is audible to a person with average hearing faculties or capacity at a distance of one hundred fifty (150) feet from the construction site, if the construction site is within one thousand (1,000) feet of an occupied residential dwelling except as provided below:

1. The development services agency director or his designated representative may for good cause exempt some construction work for a limited time.
2. Emergency work is exempt from this section.

Los Angeles County

The Los Angeles County Noise Control Ordinance, Chapter 12.08 of Title 12, as amended August 1, 1995, states:

12.08.390 Exterior noise standards--Citations for violations authorized when.

A. Unless otherwise herein provided, the following exterior noise levels [shown below in Table D-5] shall apply to all receptor properties within a designated noise zone.

TABLE D-5. LOS ANGELES COUNTY EXTERIOR NOISE STANDARDS¹

Noise Zone	Designated Noise Zone Land Use (Receptor property)	Time Interval	Exterior Noise Level (dB)
I	Noise-sensitive area	Anytime	45
II	Residential properties	10:00 pm to 7:00 am (nighttime)	45
		7:00 am to 10:00 pm (daytime)	50
III	Commercial properties	10:00 pm to 7:00 am (nighttime)	55
		7:00 am to 10:00 pm (daytime)	60
IV	Industrial properties	Anytime	70

¹Los Angeles California County Code, Title 12 Environmental Protection, 12.08.390, Exterior Noise Standards

12.08.440 Construction Noise

A. Operating or causing the operation of any tools or equipment used in construction, drilling, repair, alteration or demolition work between weekday hours of 7:00 p.m. and 7:00 a.m., or at any time on Sundays or holidays, such that the sound there from creates a noise disturbance across a residential or commercial real-property line, except for emergency work of public service utilities or by variance issued by the health officer is prohibited.

City of Lancaster

The noise regulation for the City of Lancaster is as follows:

8.24.040 - Loud, unnecessary and unusual noises prohibited—Construction and building.

Except as otherwise provided in this chapter, a person at any time on Sunday or any day between the hours of eight p.m. and seven a.m. shall not perform any construction or repair work of any kind upon any building or structure or perform any earth excavating, filling or moving where any of the foregoing entails the use of any air compressor, jack hammer, power-driven drill, riveting machine, excavator, diesel-powered truck, tractor or other earth-moving equipment, hard hammers on steel or iron or any other machine tool, device or equipment which makes loud noises within five hundred (500) feet of an occupied dwelling, apartment, hotel, mobile home or other place of residence.

(Ord. Ord. 693 § 1 (part), 1995: prior code § 4-1.4)

(Ord. No. 916, § 2, 2-10-09)

City of Los Angeles

The City's comprehensive noise ordinance (Los Angeles Municipal Code [LAMC] Section 111 et seq.) establishes sound measurement and criteria, minimum ambient noise levels for different land use zoning classifications, sound emission levels for specific uses (radios, television sets, vehicle repairs and amplified equipment, etc.), hours of operation for certain uses (construction activity, rubbish collection, etc.), standards for determining noise deemed a disturbance of the peace, and legal remedies for violations. Its ambient noise standards are consistent with current state and federal noise standards. They are correlated with land use zoning classifications in order to guide the measurement of intrusive noise that results in intermittent (periodic) or extended impacts on a geographically specific site. The intent is to maintain identified ambient noise levels and to limit, mitigate, or eliminate intrusive noise that exceeds the ambient noise levels within the zones specified. The standards guide building construction and equipment installation, equipment maintenance and nuisance noise enforcement. The city council initially adopted the ordinance in 1973 and periodically amends it to reflect current issues and noise management approaches.

As a general rule, the city's building and safety department enforces noise ordinance provisions relative to equipment (air conditioning units, swimming pool pumps, car wash facilities and other machinery) and the police department enforces provisions relative to noise generated by people (parties, amplified sound, etc.). The police department also is authorized to enforce the mechanical equipment and other provisions of the noise ordinance, relative to nuisance noise complaints.

LAMC SECTION 111.03 MINIMUM AMBIENT NOISE LEVELS

Table D-6 shows the minimum ambient noise levels for the different planning zones (amended by Ordinance No. 156,363, Effective 3/29/82). Where the ambient noise level is less than the presumed ambient noise level designated in Table D-6, the presumed ambient noise level shall be deemed to be the minimum ambient noise level.

TABLE D-6. CITY OF LOS ANGELES MINIMUM AMBIENT NOISE LEVELS

PRESUMED AMBIENT NOISE LEVEL (dB(A))		
ZONE	DAY	NIGHT
A1, A2, RA, RE, RS, RD, RW1, RW2, R1, R2, R3, R4, and R5	50	40
P, PB, CR, C1, C1.5, C2, C4, C5, and CM	60	55
M1, MR1, and MR2	60	55
M2 and M3	65	65

Daytime levels are to be used from 7:00 a.m. to 10:00 p.m. and nighttime levels from 10:00 p.m. to 7:00 a.m.

At the boundary line between two zones, the presumed ambient noise level of the quieter zone shall be used.

LAMC SECTION 112.03 CONSTRUCTION NOISE

Noise due to construction or repair work shall be regulated as provided by Section 41.40 of this Code. (Amended by Ordinance No. 161,574, Effective 9/8/86.)

City of Palmdale

The City of Palmdale noise standards are identified in Table D-7 below. The City of Palmdale General Plan outlines the following in its Noise Element (adopted 1/25/93):

GOAL N1: Minimize the exposure of residents to excessive noise to the extent possible, through the land planning and the development review process.

TABLE D-7. CITY OF PALMDALE NOISE STANDARDS

Land Use	Maximum Acceptable Levels Land Use Exterior	Interior	Scale
Residential			
SFR	65	45	dB(A) CNEL
MFR	65	45	dB(A) CNEL
MHP	65	45	dB(A) CNEL
Commercial including, but not limited to:	A noise level which does not jeopardize health, safety, and welfare of visitors.		
Retail		55	Leq(h)
Services		55	Leq(h)
Office		55	Leq(h)
Institutional including, but not limited to:	A noise level which does not jeopardize health, safety, and welfare of visitors.		
Schools		45	Leq(h)
Hospitals		45	Leq(h)
Nursing Homes		45	Leq(h)

Land Use	Maximum Acceptable Levels Land Use Exterior	Interior	Scale
Industrial including, but not limited to: Industrial Park Business Park Quarry	A noise level which does not interfere with normal business activity. Maximum 65 Leq(h) at the interface with residentially designated land.	65 65 N/A	Leq(h) Leq(h)

City of Santa Clarita

Chapter 4: Hazard Management of the City of Santa Clarita General Plan states:

Noise Level Control Standards

GOAL 1: To protect the health and welfare of the residents of the City of Santa Clarita and the planning area by the elimination, mitigation, and prevention of significant existing and future noise levels.

Policies:

- 1.1 Continue to implement a noise ordinance for the City of Santa Clarita compatible with state and federal standards, which establishes noise impact thresholds for noise abatement and attenuation in order to reduce potential health hazards associated with high noise levels.
- 1.3 Control noise sources adjacent to residential, recreational, and community facilities, and those land uses classified as noise sensitive land uses.
- 1.5 Provide development review comments on projects proposed by other agencies, such as Los Angeles County and the school districts that have potential noise impacts.

Reduction of Noise From Traffic

GOAL 2: To prevent and mitigate adverse impacts of traffic generated noise on the residents of the City and the planning area.

Policies:

- 2.5 Encourage employers to develop vanpool and other demand management programs to reduce trip-generated noise in the planning area.
- 2.7 Require vehicle owners to properly maintain their equipment to avoid generating excessive noise levels.

Noise Reduction from Commercial and Industrial Activities

GOAL 4: To prevent, mitigate, and minimize noise spillover from commercial/industrial uses into adjacent residential neighborhoods.

Policies:

- 4.1 Develop, adopt, and enforce a standard for all commercial uses of 70 dB(A) (night) and 80 dB(A) (day) which cause adverse levels of significant discernible noise on adjacent residential neighborhoods.
- 4.2 Require appropriate noise buffering between commercial/industrial and residential uses.
- 4.3 Establish standards for the control of noise from commercial and entertainment establishments when adjacent to residential land uses.

City of San Fernando

The City of San Fernando has a noise ordinance that provides noise guidelines and standards for significant noise generators. Noise standards from Chapter 34 (Environment), Article II, Division 1, of the City of San Fernando Municipal Code are presented in Table D-8.

TABLE D-8. CITY OF SAN FERNANDO NOISE STANDARDS

Location	7:00 AM to 10:00 PM dB(A)	10:00 PM to 7:00 AM dB(A)
Residential:		
Exterior	55	50
Interior	50	40
Commercial	65	60
Industrial	70	70

Source: Chapter 34 (Environment), Article II, Division 1.

Section 34-29 (Exterior Noise Standards) of the noise ordinance addresses the duration of potential exterior noise impacts:

It shall be unlawful for any person, at any location within the incorporated area of the city, to create any noise or to allow the creation of any noise on property owned, leased, occupied, or otherwise controlled by such person, when the foregoing causes the noise level, when measured by a sound level meter on any other property, to exceed the permitted ambient noise level more than ten minutes per hour.

Construction Noise Thresholds

Section 34-28 (a) (10) (Specific noises prohibited) and Section 34-31 (5) (Exclusions) of the San Fernando Municipal Code provide the following provisions for construction noise:

Noise sources associated with construction, repair, remodeling or grading of any real property are allowed up to 70 dB measured at the property line, provided such activities do not take place between the hours of 6:00 PM and 7:00 AM on weekdays, including Saturday, or at any time on Sunday or a federal holiday.

Therefore, for purposes of this analysis, a significant construction noise impact would result if construction activities occurring on the Project site would result with noise levels in excess of 70 dB(A) at the property line during the hours of 7:00 a.m. and 6:00 p.m.. Construction activities would not be allowed between 6:00 p.m. and 7:00 a.m. Monday through Saturday or any time on Sunday or a federal holiday unless an after-hours construction permit has been issued by the City pursuant to Section 34-28 (a)(10) of the City of San Fernando Municipal Code.

For construction noise, a “substantial” noise increase can be defined as interference with activities during the day and night. One indicator that construction noise could interfere with daytime activities would be speech interference. In addition to determining whether the construction noise exceeds the acceptable standard of 70 dB(A) at the nearest sensitive receptor, the following criteria would be used to define the significance of potential noise impacts:

- *Speech Interference.* Speech interference is an indicator of impact on typical daytime and evening activities. A speech interference criterion, in the context of impact duration and time of day, is used to identify substantial increases in noise from temporary construction activities. Noise peaks generated by construction equipment could result in speech interference in adjacent buildings if the noise level in the interior of the building exceeds 45 to 60 dB(A).

Operational On-Site Thresholds

According to the City's standards presented in Table D-8, commercial uses are acceptable with exterior noise levels of up to 65 dB(A) CNEL. Additionally, residential uses are considered acceptable with exterior noise levels of up to 55 dB(A) CNEL. Thresholds within the California Land Use Compatibility standards (refer to Table D-4) shall be used for uses that are not addressed in the City's *Municipal Code*.

Radio Noise

In the U.S., there are no established standards for radio noise interference (RI), either nationally or in any of the 50 states. However, as previously mentioned, the FCC does provide regulations on interference in non-numerical terms. AM Broadcast radio signals are only protected by the FCC within the "primary service area" of the radio station. However, there is no set regulation governing signal-to-noise ratio (SNR) that must be met.

A fair weather radio noise (RN, refers to both RI and TVI) level of 40 dB μ V/m (100 μ V/m) at a lateral distance of 100 feet from the outermost phase has been established as a guideline for identifying an industry accepted design criterion for RN limits (IEEE Standard 430-1991). Adjusting this guideline by 2 dB to agree with present measurement standards gives an RN level criterion of 38 dB μ V/m.

In comparison, FCC regulations state a minimum required signal strength contour limit of 54 dB μ V/m (0.5 mV/m) for the primary service area of Class A, B, C, and D broadcasting signals (CFR-2009-title47-vol4-part73.182(3)(d)). While an exact limit is not known, an SNR less than 15 dB μ V/m D(2) shown in Table 3.2.2-2 of Chapter 3 of the EIS/EIR will likely cause objectionable interference. Therefore, the maximum permissible RN level would equate to 39 dB μ V/m which is less conservative than the IEEE Std. 430 design criterion of 38 dB μ V/m.

In the absence of signal strength data for broadcasted radio signals in the area, RN levels calculated for the edge of ROW will be compared against the 38 dB μ V/m design guideline. Signal strengths will vary throughout the protected coverage area and for each given station; therefore, a complete analysis of specific effects for all stations can only be completed with measured signal strengths in the area of the transmission line. The 38 dB μ V/m design guideline will provide reasonable guidance of expected effects in the area. If signal strength measurements are performed, measurement equipment that adheres to IEC/CISPR Pub 16 standards should be used so that accurate comparisons can be made against calculated RN levels.

D.5 LAND USE

D.5.1 FEDERAL

Forest Service Manual

The Forest Service Manual Section 2700 (Special Uses Management) provides direction for the administration of special-use authorizations (SUAs) on NFS lands (USFS 1997). As described in Section 2703.2, the USFS is instructed to deny a written request for the use of NFS lands according to the following criteria:

- The proposal is inconsistent with Forest land and resource management plans;
- The proposal is in conflict with other Forest management objectives, or applicable federal statutes and regulations; or

- The proposal can be reasonably accommodated on non-NFS lands provided, however, that First Amendment group uses (freedom of assembly and worship) may not be denied on this basis.

The USFS may not authorize the use of NFS lands just because it affords the applicant a lower cost and less restrictive location when compared with non-NFS lands (USFS 1997).

However, additional guidance regarding the management of special uses, such as transmission lines across NFS lands, has been provided in the Forest Service Manual Region 5 Supplement No. 2700-92-8 (USFS 1992). As stated in Section 2726.43 of the supplement, the objectives for the management of transmission lines include the following:

- To eliminate or mitigate long-term conflicts between power lines and the management of NFS lands and resources; and
- To eliminate identified fire and safety hazards.

According to the direction provided in Section 2726.43 for the construction of transmission lines over 35 kV, aerial construction of transmission line structures (as opposed to underground construction) may be authorized, except in those areas where the environmental analysis clearly indicates unacceptable effects on NFS resource and environmental values (USFS 1992). This supplement recognizes that construction costs and operational problems increase substantially for underground construction of transmission lines over 35 kV, and states that the authorizing officer would consider undergrounding only after a thorough assessment of the situation.

Angeles National Forest Land Management Plan

The following Forest Plan management and design criteria would be applicable to the Proposed Action and Alternatives:

Aesthetic Management Standards

S10: Scenic Integrity Objectives will be met with the following exceptions:

- Minor adjustment not to exceed a drop of one SIO level is allowable with the Forest Supervisor's approval.
- Temporary drops of more than one SIO level may be made during and immediately following project implementation providing they do not exceed three years in duration.

Fish and Wildlife Standards

When Implementing Recreation Activities

S42: Include provisions for raptor safety when issuing permits for the new power lines and communication sites (see guidelines in Appendix G). Also implement these guidelines for existing permits within one year in identified high-use flyways of the California condor, and within five years in other high-use raptor flyways. Coordinate with California Department of Fish and Game, U.S. Fish & Wildlife Service, and power agencies to identify the high-use flyways.

Soil, Water, Riparian and Heritage Standards

Applicable Within Riparian Conservation Areas

S47: When designing new projects in riparian areas, apply the Five-Step Project Screening Process for Riparian Conservation Areas as described in Appendix E- Five-Step Project Screening Process for Riparian Conservation Areas.

Wild and Scenic River Standards

S59: Manage eligible wild and scenic river segments to perpetuate their free-flowing condition and proposed classifications, and protect and enhance their outstanding remarkable values and water quality through the suitability study period and until designated or released from consideration. When management activities are proposed that may compromise the outstandingly remarkable value(s), potential classification, or free-flowing character of an eligible wild and scenic river segment, a suitability study will be completed for that eligible river segment prior to initiating activities.

Pacific Crest Trail Management Plan: Angeles National Forest

The Pacific Crest Trail Management Plan (USDA Forest Service 1980) was developed to provide management direction for the portion of the PCT that traverses Forest Service lands within the ANF. In general, the Plan identifies three types of conflicting uses along the PCT that it attempts to resolve through a number of policies. These conflicting uses include:

- Illegal off-highway vehicle (OHV) use of the PCT;
- Recreational shooting in the vicinity of the PCT; and
- Conflicts between private land uses and improvements and public use of the PCT.

The PCT Management Plan divides the ANF portion of the PCT into four sections; Section C, Liebre-Annan, includes the northwestern portion of the Santa Clara/Mojave Rivers Ranger District where the Proposed Action and Alternatives would traverse the PCT. The Plan describes three major transmission lines in Bouquet and San Francisquito Canyons that cross the PCT. However, the Plan does not include any policies that pertain to changes in the existing use or recreational value of the PCT from the construction of new projects in the vicinity of the PCT.

In addition, the Pacific Crest Trail Association 2007–2009 Strategic Plan was approved July 15, 2006 and contains goals and strategies for the permanent protection of the PCT through wilderness and other public lands.

U.S. Department of the Interior, Bureau of Land Management

Designated utility corridors within the study corridors as they relate to BLM public land are presented in Table D-9.

TABLE D-9. DESIGNATED UTILITY CORRIDORS ON BLM PUBLIC LAND WITHIN THE STUDY AREA.

Field Office	Plan	Designated Utility Corridor	West-Wide Energy Corridor Final PEIS Energy Corridor
Ridgecrest	California Desert Conservation Area Plan, as Amended	Yes - Corridor A*	Yes - Corridor 23-106**
	West Mojave Plan	No	
Palm Springs-South Coast	South Coast Resource Management Plan (1994 - <i>Under Revision</i>)	No	No

*2 miles in width

**37.3 miles, 6,880-10,560 feet, multimodal. Would require DoD coordination during Project planning (Military Training Route with Floor <1,000 feet above Ground Level, Special Use Airspace with Floor <1,000 feet above Ground Level, within 5 miles of DoD Site).

Source: CDCA Plan, 1980 and West-wide Energy Corridor Final Programmatic EIS (November 2008)

Federal Aviation Administration, Federal Aviation Regulation Title 14, Part 77

Airports and navigable airspace not administered by the DoD are under the jurisdiction of the Federal Aviation Administration (FAA). The FAA issues and enforces regulations related to air traffic control and the assignment and use of airspace. The FAA's regulations are found in the Federal Aviation Regulations (FAR). FAR Title 14, Part 77, establishes the standards for determining obstructions in navigable airspace, including height limitations on structures taller than 200 feet or within 20,000 feet (approximately 3.8 miles) of an airport. The Proposed Action and Alternatives are located near several airports, and would have to comply with the safety requirements established by Title 14 Part 77, as applicable.

The standards and notification requirements of FAR Title 14 Part 77 are intended to: 1) evaluate the effect of the construction or alteration of structures on airport operating procedures; 2) determine if the construction or alteration would result in a potential hazard to air navigation; 3) identify measures to enhance safety. FAA requires notification through the filing of FAA Form 7460-1, Notice of Proposed Construction or Alteration, and Form 117-1, Notice of Progress of Construction or Alteration, if any of the following criteria are met due to the Proposed Action (Title 14 Part 77.13):

- Any construction or alteration [of a structure or object of more than 200 feet in height above the ground level at its site
- Any construction or alteration [of a structure or object of greater height than an imaginary surface extending outward and upward at one of the following slopes:
 - 100 to 1 for a horizontal distance of 20,000 feet from the nearest point of the nearest runway of each airport with at least one runway more than 3,200 feet in actual length, excluding heliports
 - 50 to 1 for a horizontal distance of 10,000 feet from the nearest point of the nearest runway of each airport specified with its longest runway no more than 3,200 feet in actual length, excluding heliports
 - 25 to 1 for a horizontal distance of 5,000 feet from the nearest point of the nearest landing and takeoff area of each heliport
- Any proposed highway, railroad, or other traverse way for mobile objects, with a height which would exceed the standards of Part 77.13 (a) (1), (2) or (3)
- When requested by the FAA, any construction or alteration [of a structure or object] that would be in an instrument approach area (defined in the FAA standards governing instrument approach procedures) and available information indicates it might exceed a standard of subpart C of this Part [Part 77]
- Any construction or alteration of a structure or object located on a public use airport or heliport that meets the criteria of Part 77.13 (a) (5)

U.S. Department of Defense

There are a number of federal and State laws mandating the development of environmental plans, including land and resource management plans, for military installations. The DoD provides supplemental guidance to these laws at a component-specific level (e.g. U.S. Air Force, U.S. Army). In most instances, each DoD component establishes additional compliance guidance to promote uniformity; each component

may also obligate its respective installations to prepare additional environmental plans and documents, depending on the nature of its specified mission.

Comprehensive Plans

A comprehensive plan is used to meet current planning needs and to set a vision for meeting the challenges related to future growth and change. The land use plan helps military base personnel understand existing conditions, documents existing needs and future expectations.

China Lake Naval Air Weapons Station: The Comprehensive Land Use Management Plan for China Lake Naval Air Weapons Station (2005) serves as the installation's guide to land management, containing land use guidelines and procedures for the management of military operations and environmental resources. The Plan incorporates the following planning context to aid installation administrators with development:

- Provides an understanding of the need for a planning approach to development
- Outlines the region and military context
- Describes the current and future mission of the installation and how it relates to land use
- Sets forth a framework for land management and an implementation guide

Edwards Air Force Base: The General Plan for Edwards AFB provides decision makers with an overview of installation development patterns and growth, as well as a vision of the installation's capability for supporting its mission in relation to physical assets. The plan incorporates the following planning context to guide development:

- Highlights findings and recommendations for development to guide the base into a sustainable future
- Provides a regional profile and an overview of installation missions and current, related development plans
- Outlines constraints and opportunities in relation to land use
- Provides a maintenance plan to keep the general plan up to date

Fort Irwin: The Fort Irwin / National Training Center Real Property Master Plan focuses on development and land use within the installation boundary and has limited discussion of off-installation issues.

Air Installations Compatible Use Zones

For China Lake Naval Air Weapons Station, Edwards AFB, and Air Force Plant 42, a critical planning document is the Air Installations Compatible Use Zones (AICUZ) program. The AICUZ is a DoD planning program that was developed in response to incompatible urban development and land use conflicts around military airfields. As designed, the AICUZ study evaluates three components: noise, vertical obstructions, and accident potential zones.

Every Navy and Air Force installation with air operations has delineated at both ends of all active runways a set of three accident potential zones referred to as the Clear Zone (CZ), Accident Potential Zone I (APZ I), and Accident Potential Zone II (APZ II). These areas are determined based on a statistical analysis of all DoD aircraft accidents.

China Lake Naval Air Weapons Station: An interim China Lake AICUZ study was released in 2007. The previous AICUZ was approved in 1977, and Kern County and the City of Ridgecrest evaluated that document and enacted the AICUZ-compatible land use provisions into their zoning ordinances and general plan. The 2007 AICUZ outlines noise and safety issues in relation to both the baseline (current) and prospective operational conditions of the base as laid out in the 2004 *Environmental Impact Statement for Proposed Military Operational Increases and Implementation of Associated Comprehensive Land Use and Integrated Natural Resources Management Plans*.

Edwards Air Force Base: Edwards AFB is exempt from publicly releasing a full AICUZ study since all noise contours and accident potential zones are located within the base boundaries.

Air Force Plant 42: Air Force Plant 42 produced an AICUZ study in 1990, updated in 2000, that provides noise contours and compatible use guidelines for land areas surrounding the installation. Recommendations are based on November 2001 operations and anticipated future aircraft and maintenance runup operations. Specially, the guidelines provide land use recommendations for APZ and four noise zones. APZs are areas where an aircraft accident is likely to occur, that follow arrival, departure, and pattern flight tracks, and are based upon analysis of historical data. AICUZ maps define three APZs – the CZ, APZ 1, and APZ 2. The Clear Zone extends 3,000 feet beyond the runway, APZ 1 extends 5,000 feet beyond the Clear Zone, and APZ 2 extends 7,000 feet beyond APZ 1.

Natural Resource Planning

The policy of the DoD is to fully comply with applicable federal, State, and county laws, ordinances, regulations, and guidelines, specifically designed to protect and preserve the environment. The Sikes Act Improvement Amendments of 1997 requires that the DoD manage its natural resources while providing a sustained method for the multiple uses of those resources. The Act also requires an Integrated Natural Resources Management Plan (INRMP). To guide natural resource management efforts on installations, China Lake Naval Air Weapons Station, Edwards AFB, and Fort Irwin each maintain an INRMP.

D.5.2 STATE

California Military Land Use Compatibility Analyst

The State of California recognizes the military's needs for low-level flight paths special use airspace to train personnel and test weapon systems effectively. The State also recognizes that the development of certain land uses may impair the military's ability to train personnel and test weapon systems. As such, Senate Bill 1462 requires State agencies to consider the effects of civilian land uses that may be incompatible with the military's use of its assets.

The California Military Land Use Compatibility Analyst, developed by the Governor's Office of Planning and Research, requires local planning agencies to notify the military whenever a proposed development is located within 1,000 feet of a military installation, within special use airspace, or beneath a low-level flight plan.

California State Lands Commission

The CSLC's Land Management Division has primary responsibility for the surface management of all sovereign and school lands in the State, including their leasing and management. Pursuant to the California Code of Regulations, Title 2, Division 3, Chapter 1, Article 2, public and private entities may apply for leases or permits on public lands for a variety of uses, including rights-of-way.

D.5.3 REGIONAL/LOCAL

Southern California Association of Governments

The Housing, Open Space and Conservation, and Energy chapters provide background information for the status of these issue areas in Southern California, but do not contain policies that would be applicable to the Proposed Action and Alternatives. However, the Growth Management chapter lists the following policy regarding public facility and utility systems:

Growth Management Policy D-1(iii): The timing, financing, and location of public facilities, utility systems, and transportation systems shall be used by SCAG to implement the region's growth policies.

Kern County General Plan

Land Use, Open Space, and Conservation Element

- **Residential Policy 5:** Discourage premature urban encroachment into areas of intense agriculture areas.
- **Resource Policy 2:** In areas with a resource designation on the General Plan map, only industrial activities which directly and obviously relate to the exploration, production, and transportation of the particular resource will be considered to be consistent with this General Plan.

Energy Element

- **Transmission Line Policy 1:** The County should encourage the development and upgrading of transmission lines and associated facilities (e.g., substations) as needed to serve Kern County's residents and access the County's generating resources, insofar as transmission lines do not create significant environmental or public health and safety hazards.
- **Transmission Line Policy 2:** The County shall review all proposed transmission lines and their alignments for conformity with the Land Use, Conservation, and Open Space Element of this General Plan.
- **Transmission Line Policy 3:** In reviewing proposals for new transmission lines and/or capacity, the County should assert a preference for upgrade of existing lines and use of existing corridors where feasible.
- **Transmission Line Policy 4:** The County should work with other agencies in establishing routes for proposed transmission lines.
- **Transmission Line Policy 5:** The County should discourage the siting of above-ground transmission lines in visually sensitive areas.
- **Transmission Line Policy 6:** The County should encourage new transmission lines to be sited/configured to avoid or minimize collision and electrocution hazards to raptors.

Circulation Element: The County's Circulation Element identifies the general location of major thoroughfares, transportation routes, utilities, and facilities. Section 2.5.2, Airport Land Use Compatibility Plan (ALUCP), addresses the issues, goals, policies, and implementation measures associated with Kern County's ALUCP, which was developed to comply with the State Aeronautics Act (Public Utilities Code, Section 21670 *et. seq.*). The primary goal of the ALUCP is to plan for land uses that are compatible with public airports and military bases. The County reviews discretionary land use development applications within an airport influence area and the military base operating area shown in the ALUCP to determine consistency with the General Plan.

Military Readiness Element: The Military Readiness Element recognizes China Lake Naval Air Weapons Station, Edwards AFB, and the Joint Service Restricted R2508 Airspace Complex as essential components in California's integrated system of military installations and special use airspace, as well as their importance in the County's economy.

Kern County has specific regulations designed to address military compatibility. Key among these provisions is Section 19.08.160 of the Kern County Zoning Ordinance, which includes restrictions on the height of structures in military flight areas. The county must submit alterations to a structure in a given zone designated on the Red/Yellow/Green height restrictions map to the military planning authority to ensure that the structure will not impede upon the missions of the installation within a specified zone. However, an applicant could process a request to the Board of Supervisors for approval in a height-restricted area based on certain findings, if the applicant does not receive concurrence by the military.

Los Angeles County General Plan

Land Use Element: The policies of the Land Use Element support the countywide General Plan policies of encouraging a more concentrated urban pattern through the revitalization of deteriorating urban areas, infilling of bypassed lands, and focusing new urban development in the most suitable locations.

- **Policy 14:** Ensure that new development is compatible with the natural and manmade environment by implementing appropriate locational controls and high quality design standards.
- **Policy 15:** Protect the character of residential neighborhoods by preventing the intrusion of incompatible uses that would cause environmental degradation such as excessive noise, noxious fumes, glare, shadowing and traffic.
- **Policy 17:** Establish and implement regulatory controls that ensure compatibility of development adjacent to or within major public open space and recreation areas including National Forests, the National Recreation Area, and State and regional parks.

Conservation, Open Space and Recreation Element, Ecological Resources Policy: Protect significant agricultural resource areas and encourage the expansion of agricultural activities into underutilized lands such as utility rights-of-way and flood prone areas.

Antelope Valley Areawide General Plan

The following policy statements from the Antelope Valley Areawide General Plan are applicable to portions of the Proposed Action and Alternatives that traverse the planning area:

- **Community Design, Compatibility and Proximity of Urban Activities, Policy 62:** Mitigate where possible undesirable impacts of adjacent land uses (i.e., noise interruption, visual intrusion, and airborne emissions) through utilization of appropriate buffers, building codes and standards.
- **Community Design, Physical Appearances/Community Image, Policy 65:** Encourage the locating of new power distribution networks, communication lines, and other service network facilities underground in urban areas. Transmission lines should be located underground where feasible.
- **Environmental Resource Management, Antelope Valley Trails Plan, Policy 163:** Encourage the use of public utility ROWs for trails when practical and compatible with the utility.

Santa Clarita Valley Area Plan

The Santa Clarita Valley Area Plan (SCVAP) includes one land use policy statement that applies to portions of the Proposed Action and Alternatives that traverse the planning area: The policy statement reads as follows:

- **Environmental Resources Management Element, Policy 6.4:** Encourage the use of public utility ROWs for trails when practical and compatible with the utility present, as shown on the Trails Plan.

The County of Los Angeles SCVAP and the County of Los Angeles Development Code include provisions that are designed to preserve ridgelines. The SCVAP includes land use classifications such as the “Hillside Management” land use category under the “Special Management Areas” section of the SCVAP. Development within Hillside Management Areas requires adherence to special precautions that are intended to limit development to the most suitable and least environmentally sensitive areas. In addition, it is intended that the scale and intensity of development be proposed in a manner that is compatible with the natural resources and character of the area.

City of Lancaster General Plan 2030

- **Policy 3.6.6:** Consider and promote the use of alternative energy such as wind energy and solar energy.

Specific Action 3.6.6(a): Work with utility companies and private enterprises in their efforts to incorporate alternative energy resources including, but not limited to, wind and solar energy.

- **Policy 10.2.2:** Establish and acquire rights-of-way for master planned trails.

Specific Action 10.2.2(a): Pursue agreements with public and private utilities for the use and maintenance of utility corridors and rights-of-way for trail purposes.

- **Policy 14.5.2:** Encourage the continued development of pipeline and utility corridors and rail freight lines, while minimizing the impacts on adjacent land uses and the roadway network.

Specific Action: 14.5.2(a): Through the development review process ensure that new development respects easements for existing pipes and utility lines.

Specific Action 14.5.2(b): Through the development review process encourage undergrounding of utilities within street rights-of-way and transportation corridors.

- **Policy 19.2.6:** Minimize the visual impacts of utility corridors and their associated equipment.

Specific Action 19.2.6(a): Work with all utility providers to determine the best location for utility cabinets and other associated hardware, with preference in areas where visual impacts are minimized.

City of Los Angeles General Plan

The following section presents the goals, objectives, and policies related to infrastructure and public services in the City of Los Angeles. Implementing programs are referenced at the conclusion of each policy. Programs are also referenced after each policy in this document.

Power, GOAL 9M: A supply of electricity that is adequate to meet the needs of Los Angeles Department of Water and Power electric customers located within Los Angeles.

Objective 9.26: Monitor and forecast the electricity power needs of Los Angeles' residents, industries, and businesses.

- **Policy 9.26.1:** The Los Angeles Department of Water and Power (LADWP) shall continue to monitor and forecast its customers' peak load on its system and identify which parts of the system should be upgraded to accommodate expected growth.

Objective 9.27: Continue to ensure that all electric power customers will receive a dependable supply of electricity at competitive rates.

- **Policy 9.27.1:** The LADWP shall continue to generate or purchase electric power to serve its customers.

Objective 9.28: Provide adequate power supply transmission and distribution facilities to accommodate existing uses and projected growth.

Policies

- **9.28.1:** The LADWP shall continue to plan its power supply capability far enough in advance to ensure that it has available capacity to meet customer demand before it is needed.
- **9.28.2:** The LADWP shall continue to ensure that the City's transmission and distribution system is able to accommodate future peak electric demand for its customers.

Objective 9.29: Provide electricity in a manner that demonstrates a commitment to environmental principals, ensures maximum customer value, and is consistent with industry standards.

Policies

- **9.29.1:** Develop and deliver services to attract, assist, and retain industries and businesses in Los Angeles.
- **9.29.2:** Promote the responsible use of natural resources, consistent with City environmental policies.
- **9.29.3:** Promote conservation and energy efficiency to the maximum extent that is cost effective and practical, including potential retrofitting when considering significant expansion of existing structures.
- **9.29.4:** Provide incentives for the development of cleaner and more energy-efficient industrial development.
- **9.29.5:** Deliver to all sectors of the economy customer service programs, products and activities that promote satisfaction and value related to the provision of electric power.
- **9.29.7:** Encourage additional markets for electrical energy, such as environmentally friendly alternative fuel for transportation in electric buses and light-duty vehicles.

Objective 9.30: Ensure continued electric service after an earthquake or other emergency.

- **Policy 9.30.1:** The LADWP shall periodically examine its emergency response programs to ensure continued electrical service.

City of Palmdale General Plan

The policies presented in the City of Palmdale General Plan are applicable to the Ritter Ranch specific plan area.

- **Policy S2.6.1:** If, in the future, conclusive evidence links electromagnetic fields (EMF) associated with electrical distribution lines, electrical distribution stations, or transformers with deleterious health effects, develop standards for construction, building setbacks, and/or land use restrictions for those areas impacted by hazardous EMF fields.

City of San Fernando General Plan

No applicable policies were identified in the City of San Fernando General Plan relative to land use.

City of Santa Clarita General Plan

- **Land Use Element, Policy 2.8:** Explore the utility ROWs for tree farms, nurseries, row crops, trails, and greenbelts.
- **Community Design Element, Policy 11.8:** Examine the use of the land under high power transmission lines for landscaping, tree farms, additional safe recreation areas, and other appropriate feasible uses.
- **Community Design Element, Policy 11.9:** Encourage single pole transmission towers and cellular poles, and avoid reinforced structural support bases.
- **Parks and Recreation Element, Policy 7.4:** Encourage multiple use and dedication of existing public easements for trail development including, but not limited to, utility lines and access easements, where appropriate.
- **Parks and Recreation Element, Policy 10.3:** Encourage and promote cooperation between agencies to facilitate the multiple use of public ROWs consistent with the general plan and public safety.

D.5.4 AIRPORT LAND USE PLANS

In 1967 the California State Legislature authorized the creation of Airport Land Use Commissions (ALUC) to protect “public health, safety, and welfare by encouraging orderly expansion of airports and the adoption of land use measures that minimize exposure to excessive noise and safety hazards within areas around public airports to the extent that these areas are not already devoted to incompatible uses” (California Department of Transportation 2007).

Kern County

The Kern County Airport Land Use Compatibility Plan (ALUCP), which was originally adopted by the County Board of Supervisors in 1996 and most recently amended in 2008, is a guidance document for the regulation of land uses around the public use airports found in the County. The document supplements the County’s General Plan and the specific area plans or general plans associated with specific cities in which public use airports reside.

The ALUCP identifies the following:

- properties on which the land uses could be affected by present or future aircraft operations at the airports included in the plan;

- properties on which the land uses could affect operations at the airports (specific influence areas); and
- properties underlying military aviation flights, including military aircraft and weapons.

The Kern County ALUCP has been developed and adopted at a local level, including Kern County and the incorporated cities of Bakersfield, California City, Delano, Shafter, Taft, Tehachapi and Wasco (Kern County 1996). The ALUCP also addresses military aviation operations associated with Edwards AFB, the China Lake Naval Aviation Weapons Station, and the Joint Service Restricted Airspace R-2508 Complex (Kern County 1996).

Kern County Airport Land Use Compatibility Plan, Revised September 2008

Section 1.0 General Applicability

Section 1.7.1(c). Prior to the approval of a proposal involving any type of land use development, as stated in Section 1.6.1, or other review as required by a Specific Plan, specific findings shall be made that such development is compatible with the training and operational missions of the military aviation installations. Incompatible land uses that result in significant impacts on the military mission of Department of Defense installations or to the Joint Service Restricted R-2508 Complex that cannot be mitigated, shall not be considered consistent with this plan.

Section 3.3 Airspace Protection

3.3.1 Height Limits. The criteria for limiting the height of structures, trees, and other objects in the vicinity of an airport shall be set in accordance with Part 77, Subpart C, of the FAA Regulations and with the United States Standard for Terminal Instrument Procedures (TERPS).

3.3.4 FAA Notification. Proponents of a project which may exceed a Part 77 surface must notify the Federal Aviation Administration as required by FAR Part 77, Subpart B, and by the California State Public Utilities Code Sections 21658 and 21659. (Notification to the Federal Aviation Administration under FAR Part 77, Subpart B, is required even for certain proposed construction that does not exceed the height limits allowed by Subpart C of the regulations. Refer to Appendix A for the specific Federal Aviation Administration notification requirements.)

- a) Local jurisdictions shall inform project proponents of the requirements for notification to the Federal Aviation Administration.
- b) The requirement for notification to the Federal Aviation Administration shall not necessarily trigger an airport compatibility review of an individual project by the local agency (county or city) if the project is otherwise in conformance with the compatibility criteria established herein.

3.3.5 Other Flight Hazards. Land use characteristics which may produce hazards to aircraft in flight shall not be permitted within any airport's influence area. Specific characteristics to be avoided include:

- a) Glare, distracting lights, or light patterns which could be mistaken for airport lights;
- b) Sources of dust, steam, or smoke which may impair pilot visibility;
- c) Sources of electrical interference with aircraft communications or navigation;
- d) Any use, especially landfills and certain agricultural uses, which may attract large flocks of birds; and
- e) Any light or series of lights which may cause visual discomfort or loss of orientation during critical phases of flight.

Section 4 Individual Airports: Policies, Compatibility Map and Background Data

4.17 Military Aviation

4.17.2 Encroachment. Because of the extreme flying capabilities and needs of military aircraft, military officials have concerns about land development that compromises the mission of the installations. The concern for encroachments on military aviation involves balancing the need to preserve the present and future light operation capabilities to meet mission requirements with the public health, safety, quality of life and economic stability of neighboring communities. The following are identified areas to be reviewed for compatibility issues:

3. Towers - Obstructions such as cellular towers, radio towers, television towers and wind turbines that penetrate into airspace become a hazard to flight safety. Concentrated numbers of such structures can result in the loss of a route as useable for testing and training operations.

4.17.3 Notification. China Lake Naval Air Weapons Station (NAWS) and Edwards Air Force Base (AFB) both shall be notified of development that falls within any of the following categories:

- Any structure within 75 miles of the R-2508 complex that is greater than 50 feet tall.
- Any project within 50 miles of R-2508 that emit radio and communications frequencies.
- Any environmental document or discretionary project within 25 miles of the military installation boundaries.
- Any project that would create environmental impacts (e.g. visibility, elevated obstructions) within 25 miles of the R-2508 complex.

Los Angeles County

Pursuant to Section 21670.2 of the California Public Utilities Code (Chapter 4, Article 3.5), the Los Angeles County Regional Planning Commission has the responsibility for coordinating airport planning of public agencies and adopting an ALUCP (California Environmental Resources Evaluation System 2007). The *Los Angeles County Airport Land Use Commission Review Procedures* set forth the review procedures and other policies that are generally applicable to all of the airports in Los Angeles County. This document was completed and adopted in December 2004 (Los Angeles County Regional Planning Commission 2007). A second document, as completed, will be specific to each of the 15 public-use and joint-use airports, including the following airports within the Project area or in close proximity: Agua Dulce Skypark, General William J. Fox Airfield (Lancaster), and Palmdale Regional Airport.

General William J. Fox Airfield Land Use Compatibility Plan

The policies set forth in the *General William J. Fox Airfield Land Use Compatibility Plan* establish the criteria applied by the County and affected local jurisdictions for evaluating the compatibility of proposed development in the airport vicinity. The plan is to be used in combination with the ALUC's county-wide Review Procedures. The airport-specific plan addresses issues associated with noise, safety, airspace protection, overflight areas, and the potential effects of proposed development on airport operations.

Palmdale Airport Land Use Compatibility Plan

At this time, the County has not prepared a specific Land Use Compatibility Plan for the Palmdale Regional Airport, but an Airport Influence Area has been established for it, and proposed development would be subject to the County-wide review procedures.

An Air Installation Compatible Use Zone (AICUZ) Study provided analysis on the effects of aircraft noise, aircraft accident potential, and land use development upon present and future land uses in the vicinity of the Palmdale Regional Airport. The AICUZ identifies military clear zones (CZs) and accident potential zones (APZs) for runways 7/25 and 4/22. The CZ, which is located at each runway end, represents the area at the highest risk of experiencing aircraft accidents. APZs I and II, which extend beyond the CZ, represent diminishing levels of risk for aircraft accidents, yet 60 percent of Air Force accidents occur within these three zones.

D.6 AGRICULTURAL RESOURCES

D.6.1 FEDERAL

Farmland Protection Policy Act (7 U.S.C. Section 4201)

The purpose of the Farmland Protection Policy Act (FPPA) is to minimize the extent to which federal programs contribute to the unnecessary and irreversible conversion of farmland to nonagricultural uses. It additionally directs federal programs to be compatible with state and local policies for the protection of farmlands. Congress passed the Agriculture and Food Act of 1981 (Public Law 97-98) containing the FPPA—Subtitle I of Title XV, Section 1539-1549. The final rules and regulations were published in the Federal Register on June 17, 1994.

Federal agencies are required to develop and review their policies and procedures to implement the FPPA every two years. The FPPA does not authorize the federal government to regulate the use of private or nonfederal land or, in any way, affect the property rights of owners.

For the purpose of FPPA, farmland includes prime farmland, unique farmland, and land of statewide or local importance. Farmland subject to FPPA requirements does not have to be currently used for cropland. It can be forest land, pastureland, cropland, or other land, but not water or urban built-up land.

Projects are subject to FPPA requirements if they may irreversibly convert farmland (directly or indirectly) to nonagricultural use and are completed by a federal agency or with assistance from a federal agency (NRCS 2008).

D.6.2 STATE

California Department of Conservation, Division of Land Resource Protection. Farmland Mapping and Monitoring Program (FMMP)

The California Department of Conservation applies the NRCS soil classifications to identify agricultural lands. These designations are used in planning California's present and future agricultural land resources. Maps of important farmlands are prepared by the California Department of Conservation as part of its Farmland Mapping and Monitoring Program. The California Department of Conservation has a minimum mapping unit of 10 acres, with parcels that are smaller than 10 acres being absorbed into the surrounding classifications.

The list below provides a comprehensive description of all the categories mapped by the California Department of Conservation. Collectively, lands classified as Prime Farmland, Farmland of Statewide Importance, and Unique Farmland are referred to as Farmland (DOC 2004).

- **Prime Farmland.** Farmland that has the best combination of physical and chemical features able to sustain long-term agricultural production. This land has the soil quality, growing season, and

moisture supply needed to produce sustained high yields. Land must have been used for irrigated agricultural production at some time during the four years prior to the mapping date.

- **Farmland of Statewide Importance.** Farmland similar to Prime Farmland but with minor shortcomings, such as greater slopes or less ability to store soil moisture. Land must have been used for irrigated agricultural production at some time during the four years prior to the mapping date.
- **Unique Farmland.** Farmland of lesser quality soils used for the production of the State's leading agricultural crops. This land is usually irrigated, but may include non-irrigated orchards or vineyards as found in some climatic zones in California. Land must have been cropped at some time during the four years prior to the mapping date.
- **Farmland of Local Importance.** Land of importance to the local agricultural economy as determined by each county's board of supervisors and a local advisory committee.
- **Grazing Land.** Land on which the existing vegetation is suited to the grazing of livestock. This category was developed in cooperation with the California Cattlemen's Association, University of California Cooperative Extension, and other groups interested in the extent of grazing activities. The minimum mapping unit for Grazing Land is 40 acres.
- **Urban and Built-up Land.** Land occupied by structures with a building density of at least one unit per 1.5 acres, or approximately 6 structures to a 10-acre parcel. This land is used for residential, industrial, commercial, institutional, public administrative purposes, railroad and other transportation yards, cemeteries, airports, golf courses, sanitary landfills, sewage treatment, water control structures, and other developed purposes.
- **Other Land.** Land not included in any other mapping category. Common examples include low density rural developments; brush, timber, wetland, and riparian areas not suitable for livestock grazing; confined livestock, poultry or aquaculture facilities; strip mines and borrow pits; and water bodies smaller than 40 acres. Vacant and nonagricultural land surrounded on all sides by urban development and greater than 40 acres is mapped as Other Land.

California Land Conservation Act (Williamson Act)

The California Land Conservation Act of 1965, commonly referred to as the Williamson Act, is promulgated in California Government Code Section 51200-51297.4, and therefore is applicable only to specific land parcels within the State of California. The Williamson Act enables local governments to enter into contracts with private landowners for the purpose of restricting specific parcels of land to agricultural or related open space uses in return for reduced property tax assessments. Private land within locally designated agricultural preserve areas is eligible for enrollment under Williamson Act contracts. The Williamson Act program is administered by the DOC, in conjunction with local governments, which administer the individual contract arrangements with landowners. The landowner commits the parcel to a 10-year period wherein no conversion out of agricultural use is permitted. Each year the contract automatically renews unless a notice of non-renewal or cancellation is filed. In return, the land is taxed at a rate based on the actual use of the land for agricultural purposes, as opposed to its unrestricted market value. Participation in the Williamson Act program is dependent on county adoption and implementation of the program and is voluntary for landowners (DOC 2007a).

The Williamson Act states that a board or council by resolution shall adopt rules governing the administration of agricultural preserves. The rules of each agricultural preserve specify the uses allowed.

Generally, any commercial agricultural use will be permitted within any agricultural preserve. In addition, local governments may identify compatible uses permitted with a use permit (DOC 2007b).

California Government Code Section 51238 states that unless otherwise decided by a local board or council, the installation, construction, alteration, or maintenance of electric and communication facilities, as well as other facilities, are determined to be compatible uses within any agricultural preserve. Section 51238 also states that boards of supervisors may impose conditions on lands or land uses to be placed within preserves to permit and encourage compatible uses in conformity with Section 51238.1. Further, Section 51238.1 allows a board or council to allow as compatible a use that without conditions or mitigations would otherwise be considered incompatible. However, this may occur only if the use meets the following conditions:

- The use will not significantly compromise the long-term productive agricultural capability of the subject contracted parcel or parcels or on other contracted lands in agricultural preserves.
- The use will not significantly displace or impair current or reasonably foreseeable agricultural operations on the subject contracted parcel or parcels or on other contracted lands in agricultural preserves. Uses that significantly displace agricultural operations on the subject contracted parcel or parcels may be deemed compatible if they relate directly to the production of commercial agricultural products on the subject contracted parcel or parcels or neighboring lands, including activities such as harvesting, processing, or shipping.
- The use will not result in the significant removal of adjacent contracted land from agricultural or open-space use.

Farmland Security Zone Act

The Farmland Security Zone Act is similar to the Williamson Act. It was passed by the California State legislature in 1999 to ensure that long-term farmland preservation is part of public policy. Farmland Security Zone Act contracts are sometimes referred to as "Super Williamson Act Contracts." Under the provisions of this act, a landowner who is already under a Williamson Act contract can apply for Farmland Security Zone status by entering into a contract with the county. Farmland Security Zone classification automatically renews each year for 20 years. In return for a 35% reduction in the taxable value of land (in addition to Williamson Act tax benefits), as well as improvements related to growing crops, the owner of the property promises not to convert the property to non-agricultural uses.

Public Resources Code Section 21060.1

PRC Section 21060.1 defines agricultural land for the purposes of assessing environmental impacts using the Farmland Mapping and Monitoring Program (FMMP). The FMMP was established in 1982 to assess the location, quality, and quantity of agricultural lands and the conversion of these lands. The FMMP provides analysis of agricultural land use and land use changes throughout California.

D.6.3 REGIONAL/LOCAL

Kern County General Plan

The Kern County General Plan (County of Kern 2009a) states that agriculture is vital to the future of Kern County and sets the goals of protecting important agricultural lands for future use and preventing the conversion of prime agricultural lands to other uses (e.g., industrial or residential uses). The Kern County General Plan includes three designations for agricultural land:

- **8.1, Intensive Agriculture (minimum parcel size: 20 acres, gross)**, land that is devoted to the production of irrigated crops or having the potential for such use;
- **8.2, Resource Reserve (minimum parcel size: 80 acres, gross)**, areas with mixed natural resource characteristics, including rangeland; and
- **8.3, Extensive Agriculture (minimum parcel size: 20 acres, gross, except lands subject to a Williamson Act contract/Farmland Security Zone contract, in which case the minimum parcel size shall be 80 acres, gross)**, devoted to uses involving large amounts of land with relatively low value-per-acre yields, such as livestock grazing, dryland farming, and woodland uses.

The policies, goals, and implementation measures in the Kern County General Plan for agricultural resources applicable to the Proposed Action and Alternatives are provided below. The Kern County General Plan contains additional policies, goals, and implementation measures that are more general in nature and not specific to development such as the Proposed Action and Alternatives.

Land Use, Open Space, and Conservation Element

1.9 Resource

Goal 1. To contain new development within an area large enough to meet generous projections of foreseeable need, but in locations that will not impair the economic strength derived from the petroleum, agriculture, rangeland, or mineral resources or diminish the other amenities that exist in the county.

Goal 2. Protect areas of important mineral, petroleum, and agricultural resource potential for future use.

Goal 5. Conserve prime agriculture lands from premature conversion.

Goal 6. Encourage alternative sources of energy, such as solar or wind energy, while protecting the environment.

Policy 1. Appropriate resource uses of all types will be encouraged as desirable and consistent interim uses in undeveloped portions of the county regardless of general plan designation.

Policy 7. Areas designated for agricultural use, which include Class I and II and other enhanced agricultural soils with surface delivery water systems, should be protected from incompatible residential, commercial, and industrial subdivision and development activities.

Policy 12. Areas identified by the NRCS (formerly Soil Conservation Service) as having high range-site value should be conserved for Extensive Agriculture uses or as Resource Reserve, if located within a county water district.

Implementation Measure F. Prime agricultural lands, according to the Kern County Interim-Important Farmland 2000 map produced by the California Department of Conservation, that have Class I or II soils and a surface delivery water system shall be conserved through the use of agricultural zoning with minimum parcel size provisions.

Williamson Act Standard Uniform Rules

Kern County has adopted Agricultural Preserve Standard Uniform Rules, which identify land uses that are considered compatible uses within agricultural preserves established under the Williamson Act. These

rules are designed to restrict uses to agricultural or other compatible uses on land that is enrolled in a Williamson Act contract. Agricultural uses include crop cultivation, grazing operations, commercial wind farms, livestock breeding, dairies, and uses that are incidental to agricultural uses. Other compatible uses include the erection of gas, electric, communication, water, or other similar public utility infrastructure (County of Kern 2009e).

Los Angeles County General Plan

Land Use Element

Policy 20: Protect identified Potential Agricultural Preserves by discouraging inappropriate land division and allowing only use types and intensities compatible with agriculture.

Conservation, Open Space and Recreation Element

Ecological Resources Policy: Protect significant agricultural resource areas and encourage the expansion of agricultural activities into underutilized lands such as utility rights-of-way and flood prone areas.

Antelope Valley Areawide General Plan

Land Use, Agricultural Lands

Policy 28: Within designated "Agricultural Opportunity Areas," carefully evaluate extension of urban and suburban uses (outside the urban areas and the rural communities) for their impact on adjacent agricultural operations.

Policy Statement 142. Encourage the continued production of existing agricultural lands within the Antelope Valley.

City of Palmdale General Plan

Policy ER8.1: Encourage the preservation of agricultural lands in non-urban areas as an interim use where urban development is not anticipated for several years.

Policy ER8.2: Preserve agricultural uses as a means of retaining aquifer recharge both naturally and through treated water sources.

City of Santa Clarita General Plan

Land Use Element

Policy 2.8: Explore the utility ROWs for tree farms, nurseries, row crops, trails, and greenbelts.

Community Design Element

Policy 11.8: Examine the use of the land under high power transmission lines for landscaping, tree farms, additional safe recreation areas, and other appropriate feasible uses.

D.7 RECREATION

D.7.1 FEDERAL

California Desert Conservation Area Plan 1980, as amended

Recreation is specifically addressed in three CDCA Plan Elements: (1) recreation, (2) wilderness, and (3) motorized-vehicle access. The Recreation Element manages recreation use to minimize user conflicts, to

provide a safe recreation environment, and to protect desert resources. The Wilderness Element sets aside public lands that possess wilderness characteristics to be managed to provide for generally lower-intensity, carefully controlled multiple use of resources, while ensuring that sensitive values are not significantly diminished. The Motorized-Vehicle Access Element provides a system and set of rules governing access to the CDCA by motor vehicles.

Angeles National Forest Land Management Plan, 2005

The Part 1 Goals and Objectives that are relevant to the recreation analysis for the Proposed Action and Alternatives are summarized below in Table D-10.

TABLE D-10. PART 1 OF THE 2005 ANFLMP: GOALS AND OBJECTIVES RELEVANT TO RECREATION FOR THE PROPOSED ACTION AND ALTERNATIVES

Goals and Objectives	Project Relevance
Strategic Goals – National Strategic Plan	
Goal 3: Provide outdoor recreation opportunities	Objectives 1 and 2 under Goal 3 are relevant to the Proposed Action and Alternatives, as described below.
Objective 1: Improve public access to National Forest System land and water and provide opportunities for outdoor health-enhancing activities.	The Proposed Action and Alternatives would include road improvements to provide access to transmission structure locations. Road improvements may result in increased public access to NFS lands, including recreational areas such as water resources which may be utilized by the public for health-enhancing activities.
Objective 2: Improve the management of off-highway vehicle use to protect national resources, promote safety of all users, and minimize conflicts among various uses through the collaborative development and implementation of locally-based travel management plans.	The Proposed Action and Alternatives would require upgrades to existing roads that may alter the availability of existing OHV routes during construction and/or operational activities.
Goal 6: Mission related work in addition to that which supports the agency goals	The following objective and actions under Goal 6 are relevant to the Proposed Action and Alternatives.
Objective 3: Maintain the environmental, social, and economic benefits of forests and grasslands by reducing their conversion to other uses.	The Proposed Action and Alternatives would slightly intensify an existing use of NFS lands in the ANF which could have the potential to affect recreational benefits of the Forest from an environmental and social perspective.
<p>Actions needed to address the Four Threats include:</p> <ul style="list-style-type: none"> <i>Fire and fuels</i> – Restore healthy, disturbance-resilient ecosystems on lands that are at risk of catastrophic fire, improving the condition and function of critically important watersheds, and sustaining critical wildlife habitats nationwide. <i>Invasive species</i> – Protect forest and rangeland ecosystems by preventing the release of non-native species and by controlling the spread of, or eradicating, invasive species. <i>Loss of open space</i> – Conserve the nation's forests and rangelands most at risk (due to subdivision and land conversion) by working with partners, communities and landowners to balance development with sustaining ecosystem services and viable working landscapes. <i>Unmanaged recreation</i> – Work with partners to develop travel management plans that regulate the use of off-highway vehicles (OHVs) on designated roads, trails, and parks in an appropriate manner. 	Under the Four Threats identified, the "unmanaged recreation" threat is relevant to this recreation analysis. The Proposed Action and Alternatives would include road improvements that could potentially be used by OHV recreationists for unmanaged or unauthorized recreational purposes.

Goals and Objectives	Project Relevance
Managed Recreation in a Natural Setting Element	
Goal 3.1: Provide for Public Use and Natural Resource Protection <ul style="list-style-type: none"> • Recreation • Conservation Education • Heritage Site Protection • Tribal and Native American Use • Road and Trail System • Habitat Protection 	<p>The Proposed Action and Alternatives does not directly provide for public use and natural resource protection (Goal 3.1). The Proposed Action and Alternatives would have the potential to affect the availability for public use of specific recreational resources, roads, and trails during construction and/or operational activities.</p>

The program emphasis and objectives for non-recreation special uses is to manage infrastructure needs to support communities while preserving open space and natural settings. Special uses are authorized only when they cannot be reasonably accommodated on non-NFS lands. Maintaining open space is given priority over accommodating urban needs. In addition, Appendix B of Part 2 of the ANFLMP includes a list of program strategies that the ANF may choose to emphasize to progress toward achieving the desired conditions and goals of the ANFLMP. Part 2 Management Strategies that are relevant to the recreation analysis for the Proposed Action and Alternatives are summarized below in Table D-11.

TABLE D-11. PART 2 OF THE 2005 ANFLMP: MANAGEMENT STRATEGIES RELEVANT TO RECREATION FOR THE PROPOSED ACTION AND ALTERNATIVES

Management Strategies	Project Relevance
Forest Specific Design Criteria	
Place Specific Standards – ANF S1 – Pacific Crest Trail – Protect scenic integrity of foreground views as well as from designated viewpoints. Where practicable, avoid establishing nonconforming land uses within the viewshed of the trail (Liebre-Sawmill, Santa Clara Canyons, Soledad Front Country and Angeles High Country).	<p>The Proposed Action and Alternatives would slightly intensify existing impacts of transmission towers to the viewshed of the PCT and would have some effect on the recreational experience available to users of the PCT, particularly in the two locations where the Proposed Action would traverse the PCT on NFS lands and particularly during construction and maintenance activities.</p>
TRANS 1: Transportation System	
<p>Plan, design, construct, and maintain National Forest System roads and trails to meet plan objectives, to promote sustainable resource conditions, and to safely accommodate anticipated levels and types of use.</p>	<p>The Proposed Action and Alternatives would include road improvements to provide access to each proposed transmission tower location during construction and operations/maintenance activities. Existing roadways would be utilized to the extent feasible, but installation of new roads or trails may also be necessary.</p>
TRANS 3: Improve Trails	
<p>Develop an interconnected, shared-use trail network and support facilities that complement local, regional and national trails and open space, and that also enhance day-use opportunities and access for the general public:</p> <ul style="list-style-type: none"> • Manage the Pacific Crest National Scenic Trail to protect the trail experience, and provide for the conservation and enjoyment of its nationally important scenic, historic, natural, and cultural qualities. • Maintain and/or develop access points and connecting trails linked to surrounding communities and create opportunities for non-motorized trips of short duration. 	<p>The Proposed Action and Alternatives would intensify existing transmission line usage of NFS lands and would have the potential to affect existing trails and trails networks in the Forest through restricting access and access points during construction and/or operation and through increasing the prominence of transmission towers in the viewshed of specific trails, including the PCT.</p>

Management Strategies	Project Relevance
LANDS 2: Non-Recreation Special Use Authorizations	
<p>Optimize utilization of encumbered National Forest System land and efficiently administer special-use authorizations (SUAs):</p> <ul style="list-style-type: none"> Require SUAs to maximize opportunities to co-locate facilities and minimize encumbrance of National Forest System land. Where overhead transmission lines occur in California Condor habitat, work with utility companies or authorization holders to install high-visibility or avoidance devices and raptor guards on poles and other structures potentially used as perching sites by California Condors. For special-use authorization holders operating within threatened, endangered, proposed, candidate and sensitive species key and occupied habitats, or areas of heritage resource sites develop and provide information and education (e.g., workshops, annual meetings) on ways to avoid and minimize effects of their activities on occupied threatened, endangered, proposed, candidate and sensitive species habitat and heritage resource sites present. Use signing, barriers, or other suitable measures to protect threatened, endangered, proposed, candidate and sensitive species key and occupied habitats within special-use authorization areas. 	<p>Infrastructure associated with the Proposed Action and Alternatives would be situated adjacent to similar, existing infrastructure. Any SUAs for the Proposed Action and Alternatives would be acquired and complied with as necessary..</p>

Part 3 of the ANFLMP presents the Design Criteria that Forest managers operate under in an effort to actualize the desired conditions described in Part 1 (Vision) of the ANFLMP. Part 3 includes two components: the first component contains the forest plan standards and guidelines, and the second component contains the laws, policy or other direction that may be applicable to proposed activities. The standards, which can only be changed through a Forest Plan amendment, are the fundamental requirements that define the parameters for activities within the Forest. Part 3 Design Criteria that are relevant to the recreation analysis for the Proposed Action and Alternatives are summarized below in Table D-12.

TABLE D-12. PART 3 OF THE 2005 ANFLMP: DESIGN CRITERIA STANDARDS RELEVANT TO RECREATION FOR THE PROPOSED ACTION AND ALTERNATIVES

Design Criteria Standards	Project Relevance
Fish and Wildlife Standards	
S25: Conduct road and trail maintenance activities during the season of year that would have the least impact on threatened, endangered, and proposed wildlife species in occupied habitats, except as provided by site-specific consultation.	The Proposed Action and Alternatives would include road and trail improvements and maintenance in order to provide access to each of the transmission structure locations.
When Implementing Recreation Activities	
S34: Where a threatened, endangered, proposed, candidate, or sensitive species occurs in a recreation site or area, take steps to avoid or minimize negative impacts to the threatened, endangered, proposed, candidate or sensitive species and its habitat. Use the least restrictive action that will effectively mitigate adverse impacts to the species and habitat.	The Proposed Action and Alternatives would traverse multiple recreation sites and areas on NFS lands. Construction and maintenance activities could require that certain recreation sites and areas be used for staging or other Project-related activities.

Design Criteria Standards	Project Relevance
<u>Wild and Scenic River Standards</u>	
S59: Manage eligible wild and scenic river segments to perpetuate their free-flowing condition and proposed classifications, and protect and enhance their outstandingly remarkable values and water quality through the suitability study periods and until designated or released from consideration. When management activities are proposed that may compromise the outstandingly remarkable value(s), potential classification, or free-flowing character of an eligible wild and scenic river segment, a suitability study will be completed for that eligible river segment prior to initiating activities.	The Proposed Action and Alternatives would traverse a segment of the San Francisquito Canyon which is currently eligible for designation as Wild and Scenic River.

National Trails System Act of 1968

The National Trails System Act of 1968 (Public Law 90-543), was passed by Congress in 1968 to create a series of trails “to promote the preservation of, public access to, travel within, and enjoyment and appreciation of the open-air, outdoor areas and historic resources of the Nation.” The Act authorized National Scenic Trails as well as National Recreation Trails and the connecting and side trails. National Scenic Trails are established to provide access to “spectacular natural beauty and to allow the pursuit of healthy outdoor recreation” and “extended trails so located as to provide for maximum outdoor recreation potential and for the conservation and enjoyment of the nationally significant scenic, historic, natural, or cultural qualities of the areas through which such trails may pass.” In addition, the 1968 act also authorized creation of the PCT as a National Scenic Trail. As Congressionally established long-distance trails, each trail is administered by a federal agency, such as by the USFS for the PCT.

Pacific Crest National Scenic Trail Strategic Plan, 2006

The PCTA 2007–2009 Strategic Plan was approved July 15, 2006 and contains goals and strategies for the permanent protection of the Pacific Crest Trail through wilderness and other public lands. As described in the PCTA’s Strategic Plan, the PCTA’s mission is to “...protect, preserve, and promote the PCT as an internationally significant resource for the enjoyment of hikers and equestrians, and for the value that wild and scenic lands provide to all people.”

Land and Water Conservation Fund Act, 16 U.S.C., Section 460, 1-8

The Land and Water Conservation Fund (LWCF) is a conservation program established by congress in 1965 to create parks and open spaces, to protect wilderness, wetlands and refuges, to preserve wildlife, and to enhance recreational opportunities. The National Park Service’s (NPS) Pacific West Regional Office administers the LWCF program for California and other western states. Property acquired or developed with LWCF assistance is to be retained and used for public outdoor recreation. Conversions of properties under Section 6(f)(3) of the LWCF Act occur when a project or use eliminates or diminishes the public outdoor recreation of protected lands.

In certain situations, a conversion cannot be avoided and the approval of the NPS must be sought. Land that is converted must be replaced with land of equal value, usefulness, and location. Repayment of the amount of LWCF assistance in lieu of replacement property will not be allowed, nor will construction of replacement facilities.

D.7.2 STATE

California Outdoor Recreation Plan, 2009

California State Parks' Planning Division develops the California Outdoor Recreation Plan (CORP): the statewide master plan for parks, outdoor recreation, and open space for all recreation providers. The California Outdoor Recreation Plan provides policy guidance to all public agencies—federal, State, local, and special districts—engaged in providing outdoor recreational lands, facilities and services throughout California. The CORP is updated periodically. The most recent was produced in 2008 and approved in 2009.

Antelope Valley California Poppy Reserve, 1979

The Antelope Valley California Poppy Reserve Resource Management Plan, General Development Plan, and Environmental Report is a guide for the future development and management of the Reserve. More specifically, the Plan:

- Identifies the natural and cultural resources in the unit, and provides for their perpetuation, protection, management, enhancement, and interpretation.
- Determines the maximum carrying capacity of the unit's lands, and ensures that uses planned are within this limitation.
- Identifies and attempts to provide solutions to existing problems at the reserve.
- Provides appropriate recreational opportunities for California citizens, with special emphasis on the needs of urban populations within a two-hour travel time zone of the reserve.
- Determines possible environmental impacts of the General Development Plan, and alternatives to the plan.
- Provides guidelines for facility development.
- Identifies lands outside existing reserve boundaries that are of prime concern to present and future environmental values, and to visitor use of the reserve.

The Plan also serves as an informational document for the public, reserve management personnel, the Legislature, and local entities.

D.7.3 REGIONAL/LOCAL

Antelope Valley Areawide General Plan, 1986

Policy 166: Where a proposed discretionary project encompasses a mapped trail corridor, a trail dedication requirement will be a condition of approval.

City of Lancaster General Plan 2030, 2009

Policy 10.2.2: Establish and acquire rights-of-way for master planned trails.

Specific Actions: 10.2.2(a) Pursue agreements with public and private utilities for the use and maintenance of utility corridors and rights-of-way for trail purposes.

City of Palmdale General Plan, 1993

Policy PRT1.4.1: Create linear parks along drainage courses, utility easements or other such features. Linear parks can include pedestrian paths, bikeways or par courses (fitness courses).

City Ranch Specific Plan

Policy 8: Ensure that development respects the unique character of the natural environment and surrounding development patterns

Ritter Ranch Specific Plan

Objective 4.1: Provide open space areas for conservation, recreation, leisure and aesthetic purposes

D.8 PUBLIC SERVICES AND UTILITIES

D.8.1 FEDERAL

National Fire Plan

There are no specific directions in the National Fire Plan to permit holders on their responsibilities for power line clearance requirements or other forest management activities.

Title 14 CFR Section 91.137, Temporary Flight Restrictions in Proximity to Disaster/Hazard Areas

Under 14 CFR Section 91.137, an administrator may issue a Notice to Airmen (NOTAM) for areas which are subject to temporary flight restrictions (TFR). Only aircraft participating in hazard relief or emergency response activities are permitted to operate within the designated TFR areas when a NOTAM has been issued. All helicopters utilized for construction activities would be prohibited from flying in designated TFR areas under conditions of wildfire.

D.8.2 STATE

Protection of Underground Infrastructure

Section 1, Chapter 3.1 "Protection of Underground Infrastructure," Article 2 of California Government Code 4216 mandates utility providers to contact a regional notification center at least two days prior to excavation of any subsurface installations. The Underground Service Alert serves as the notification center for Southern California. Any utility provider planning to begin an excavation project must call Underground Service Alert's toll-free hotline. Subsequently, Underground Service Alert will contact utility companies with buried lines within 1,000 feet of the planned excavation area. Utility company representatives are required to flag the location of their facilities within the work area prior to the commencement of excavation activities. Construction personnel must probe and expose the underground utility conduits by hand prior to using power equipment for excavation.

California Integrated Waste Management Act

The California Integrated Waste Management Act of 1989 (Assembly Bill 939) was adopted to redefine waste management practices and to minimize the volume and toxicity of solid waste that is disposed at landfill facilities in the State. Assembly Bill 939 requires that each local jurisdiction prepare a Source Reduction and Recycling Element to show reduction in the amount of solid waste being disposed to landfills, with diversion objectives of 50 percent by the year 2000. Table D-13 summarizes the solid waste diversion rates recorded between 2004 and 2006 for the local jurisdictions within the BR RTP area.

TABLE D-13. SOLID WASTE DIVERSION RATES (AS A PERCENTAGE OF THE TOTAL WASTE STREAM)²

Jurisdiction	2004	2005	2006
Kern County (Unincorporated)	57	60	62
Los Angeles County (Unincorporated)	53	50	54
City of Lancaster	42	50	50
City of Palmdale	56	57	59
City of Santa Clarita	46	49	54
City of Los Angeles	Not available	Not available	Not available

Source: CIWMB, August 2010

D.8.3 REGIONAL/LOCAL

City of Lancaster General Plan: Plan for Municipal Services and Facilities

The following goals and policies relating to utilities and service systems are applicable to the BRRTP in the City of Lancaster:

- Goal 15: Provide a full range of municipal services and facilities at desired levels for urban and rural areas, as appropriate
- Policy 15.1.1. Promote continued coordination between the City of Lancaster and Local Service Providers.
- Policy 15.2.2. Minimize the generation of solid wastes as required by State Law (AB 939) through an integrated program of public education, source reduction, and recycling.

City of Palmdale General Plan

The City of Palmdale General Plan, Public Services Element, addresses electric transmission facilities:

“Objective PS1.6: Ensure that utilities are provided to serve development in Palmdale in an efficient and aesthetic manner.

Policy PS1.6.1: Through adoption of an ordinance, regulate utility line and other utility infrastructure placement and require undergrounding where feasible.

Policy PS1.6.2: Coordinate installation of utility line placement with street construction where possible, to minimize cost.

Policy PS1.6.3: Through the development review process, protect existing utility easements and require dedication of additional easements where needed.”

City of Santa Clarita General Plan (Public Services, Facilities, and Utilities Element)

The following goals and policies are applicable to the BRRTP within the City of Santa Clarita:

² Note: Beginning with reporting year 2007 jurisdiction annual reports, diversion rates will no longer be measured. With the passage of SB 1016, the Per Capita Disposal Measurement System, only per capita disposal rates will be measured. For 2007 and subsequent years, CalRecycle compares reported disposal tons to population to calculate per capita disposal expressed in pounds/person/day

- Goal 1: Work with utilities and other service providers to ensure adequate and safe public infrastructure and public services for City residents, including upgrading and expansion of existing deficient systems.
- Policy 1.15. Maintain law enforcement and fire protection personnel and service standards to ensure that all residents, businesses, and visitors to the City are protected.
- Policy 1.18. Work and cooperate with school districts, developers, and the County to ensure appropriate means to facilitate the development of school facilities to accommodate growth and ensure that the school districts can meet future needs.

D.9 HAZARDOUS WASTE AND MATERIALS

D.9.1 FEDERAL

Occupational Safety and Health Administration

The federal Occupational Safety and Health Administration (OSHA) enforces regulations covering the handling of hazardous materials in the workplace. The regulations established in the Code of Federal Regulations (CFR) Title 29 are designed to protect workers from hazards associated with encountering hazardous materials at the work site. The regulations require certain training, operating procedures, and protective equipment to be used at work sites that could encounter hazardous materials.

Angeles National Forest Land Management Plan, 2005

The following Strategy from Part 2 of the 2005 ANF Land Management Plan (ANFLMP) is applicable to the BR RTP:

- **WAT 3: Hazardous Materials.** The objective of this strategy is to manage known hazardous materials risks by:
 - Maintaining a written Hazardous Materials Response Plan that addresses risk and standard cleanup procedures.
 - Coordinate with federal, tribal, state, city and county agencies, and local landowners to develop emergency response guidelines for hazardous spills on National Forest System land or on adjacent land with the potential to affect threatened, endangered, proposed, candidate, and sensitive fish and amphibian habitat. In the event of hazardous material spills in known habitat on National Forest System land, the Forest Service will contact the USFWS within 24 hours.
 - Quickly contact resource personnel and use them as consultants to minimize impacts to habitat and to initiate emergency consultation with the USFWS if necessary.
 - Provide habitat maps to response personnel for hazardous spills.

Bureau of Land Management

The BLM collaborates with the Environmental Protection Agency (EPA), state environmental quality departments, local jurisdictions, and responsible parties to adequately manage the remediation of hazardous materials sites on BLM lands. The BLM Handbook 1703, "Hazard Management and Resource Restoration," has set the following policies which relate to the remediation of hazardous sites on lands within their jurisdiction:

- Protect public health and safety and environmental resources by minimizing environmental contamination and hazards on public land and BLM owned or operated facilities.
- Comply with federal and state hazardous materials management laws and regulations and laws and regulations dealing with other hazards.
- Maintain the health of ecosystems through assessment, cleanup, correction, and restoration of contaminated sites and other hazards.
- Manage hazards and hazardous materials related risks, costs and liabilities.
- Integrate environmental protection and compliance with all environmental statutes into all BLM activities.

Resource Conservation and Recovery Act

Under the federal Resource Conservation and Recovery Act (RCRA), individual states may implement their own hazardous waste programs in lieu of RCRA as long as the state program is at least as stringent as federal RCRA requirements and is approved by the EPA. The EPA approved California's RCRA program, referred to as the Hazardous Waste Control Law (HWCL), in 1992.

Toxic Substance Control Act

The Toxic Substance Control Act (TSCA) of 1976 was enacted by Congress in 1976, and has enabled the EPA to track 75,000 chemicals produced or shipped into the United States from abroad. The EPA then monitors these chemicals and can mandate reporting or testing for those that may be detrimental to human health or the environment. The EPA is responsible for placing bans on the manufacturing and importation of chemicals that pose an unreasonable risk or hazard to the environment or human health.

CERCLA

The Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) was developed to protect the water, air, and land resources from the risk created by past chemical disposal practices. This act is also referred to as the Superfund Act, and the sites listed under it are referred to as Superfund sites. Under CERCLA, the EPA maintains a list, known as CERCLIS, of all contaminated sites in the nation that have in part or are currently undergoing clean-up activities. CERCLIS contains information on current hazardous waste sites, potential hazardous waste sites, and remedial activities. This includes sites that are on the National Priorities List (NPL) or being considered for the NPL.

D.9.2 STATE

California Code of Regulations

The California Code of Regulations (CCR), Title 22, Section 66261.20-24, contains technical descriptions of characteristics that would classify wasted material, including soil, as hazardous waste. When excavated, soils with concentrations of contaminants higher than certain acceptable levels must be handled and disposed as hazardous waste.

California Hazardous Materials Release Response Plans and Inventory Law

The California Hazardous Materials Release Response Plan and Inventory Law of 1985 (Business Plan Act) requires that businesses that store hazardous materials onsite prepare a business plan and submit it to

local health and fire departments. The business plan must include details of the facility and business conducted at the site, an inventory of hazardous materials that are handled and stored onsite, an emergency response plan, and a safety and emergency response training program for new employees with an annual refresher course.

California Occupational Safety and Health Administration

In California, the California Occupational Safety and Health Administration (Cal OSHA) regulates worker safety similar to the federal OSHA. Cal OSHA has developed worker safety regulations for the safe abatement of lead-based paint and primers (Lead in Construction Standard, Title 8 CCR 1532.1).

California Public Utilities Code

California Public Utilities Code Section 21658 prohibits structural hazards associated with utility poles and lines near airports. Should a transmission line be located in the vicinity of an airport or exceeded 200 feet in height, a Notice of Proposed Construction or Alteration (Form 7460-1) is required by the Federal Aviation Administration in accordance with Federal Aviation Regulation, Part 77 "Objects affecting Navigable airspace."

Department of Toxic Substance Control

The Department of Toxic Substance Control (DTSC) is responsible for regulating the use, storage, transport, and disposal of hazardous substances in the State. The DTSC maintains a Hazardous Waste and Substances Site List for site cleanup. This list is commonly referred to as the Cortese list. Other state and local government agencies are required to provide additional hazardous material release information for the Cortese List.

Hazardous Materials Emergency Response

Pursuant to the Emergency Services Act, California has developed an Emergency Response Plan to coordinate emergency services provided by federal, State, and local governmental agencies and private persons. Response to hazardous materials incidents is one part of this plan. The plan is administered by the State Office of Emergency Services (OES). The OES coordinates the responses of other agencies, including the EPA, CHP, California Department of Fish and Game (CDFG), the Regional Water Quality Control Boards (RWQCBs), the local air districts, and local agencies.

Pursuant to the Business Plan Law, local agencies are required to develop "area plans" for the response to releases of hazardous materials and wastes. These emergency response plans depend to a large extent on the Business Plans submitted by people who handle hazardous materials. An area plan must include pre-emergency planning and procedures for emergency response, notification, and coordination of affected government agencies and responsible parties, training, and follow up.

Hazardous Materials Transportation

The State of California has adopted U.S. Department of Transportation (USDOT) regulations for the intrastate movement of hazardous materials; State regulations are contained in 26 CCR. In addition, the State of California regulates the transportation of hazardous waste originating in the State and passing through the State (26 CCR). Both regulatory programs apply in California.

The two State agencies with primary responsibility for enforcing federal and State regulations and responding to hazardous materials transportation emergencies are the CHP and the California Department of Transportation (Caltrans). The CHP enforces hazardous materials and hazardous waste labeling and packing regulations to prevent leakage and spills of material in transit and to provide detailed information to cleanup crews in the event of an accident. Vehicle and equipment inspection, shipment preparation,

container identification, and shipping documentation are the responsibility of the CHP, which conducts regular inspections of licensed transporters to ensure regulatory compliance. Caltrans has emergency chemical spill identification teams at as many as 72 locations throughout the State that can respond quickly in the event of a spill.

Hazardous Waste Management and Handling

In California, Cal EPA and DTSC, a department within Cal EPA, regulate the generation, transportation, treatment, storage, and disposal of hazardous waste. DTSC has primary hazardous material regulatory responsibility, but can delegate enforcement responsibilities to local jurisdictions that enter into agreements with DTSC for the generation, transport, and disposal of hazardous materials under the authority of the Hazardous Waste Control Law (HWCL).

The hazardous waste regulations establish criteria for identifying, packaging, and labeling hazardous wastes; prescribe the management of hazardous wastes; establish permit requirements for hazardous waste treatment, storage, disposal, and transportation; and identify hazardous wastes that cannot be disposed of in ordinary landfills. Hazardous waste manifests must be retained by the generator for a minimum of three years. Hazardous waste manifests provide a description of the waste, its intended destination, and regulatory information about the waste. A copy of each manifest must be filed with the State. The generator must match copies of hazardous waste manifests with receipts from treatment, storage, and disposal facilities.

Contaminated soils and other hazardous materials removed from a site during construction or remediation may need to be handled as hazardous wastes.

State Water Resources Control Board

The State Water Resources Control Board (SWRCB) and the Regional Water Quality Control Boards (RWQCBs) administer the requirements of the Clean Water Act that regulate pollutant discharges into waterways of the U.S. The Colorado River RWQCB enforces site cleanup regulations for illicit discharges that have resulted in contamination of groundwater in the Project area.

Unified Hazardous Waste and Hazardous Materials Management Regulatory Program

In January 1996, Cal EPA adopted regulations that implemented a Unified Hazardous Waste and Hazardous Materials Management Regulatory Program (Unified Program). The program has six elements, including: (1) hazardous waste generators and hazardous waste onsite treatment; (2) underground storage tanks (USTs); (3) aboveground storage tanks (ASTs); (4) hazardous materials release response plans and inventories; (5) risk management and prevention programs; and (6) Unified Fire Code hazardous materials management plans and inventories. The plan is implemented at the local level and the agency responsible for implementation of the Unified Program is called the Certified Unified Program Agency (CUPA).

D.9.3 REGIONAL/LOCAL

Certified Unified Program Agency

The Certified Unified Program Agency (CUPA) is an agency certified by the DTSC to implement the Unified Program which regulates underground tanks, hazardous materials, and any unauthorized release of hazardous material. The CUPAs responsible for administering hazardous materials programs in Kern and Los Angeles Counties include the Kern County Environmental Health Services Department

(Hazardous and Solid Waste Division), and the Los Angeles County Fire Department (Health and Hazardous Materials Division).

City of Lancaster General Plan:

The following policy relating to hazardous materials is applicable to the BR RTP in the City of Lancaster:

- Policy 4.5.1(a): Ensure that activities within the City of Lancaster transport, use, store, and dispose of hazardous materials in a responsible manner which protects the public health and safety.

D.10 TRAFFIC AND TRANSPORTATION

D.10.1 FEDERAL

The Code of Federal Regulations (CFR) provides guidelines for regulations as it relates to the movement of hazardous materials via the Federal Motor Carrier Safety Administration. Under the Federal Aviation Administration guidelines, regulations are provided for aviation activities during the construction and post-construction periods.

D.10.2 STATE

The California Vehicle Code (CVC), along with the California Streets and Highway Code, outlines regulations as they pertain to the transportation of hazardous waste within the State.

D.10.3 REGIONAL/LOCAL

Separate traffic study guidelines are published by the City of Los Angeles (via the Department of Transportation, Valley Development Review), the City of Santa Clarita, the County of Los Angeles (via the Metro Congestion Management Program [CMP]), and the County of Kern and the Kern Council of Governments (via the CMP and the Regional Transportation Plan). The Proposed Action and Alternatives, outside of the switching station sites, are corridor-based and general construction concepts have been developed for these corridors. Therefore, the potential for impacts to roadway facilities that intersect these corridors has been defined based on City and County traffic impact standards and general engineering principles, such as roadway capacity and Level of Service (LOS). LOS is a qualitative measure of traffic operating conditions, whereby a letter grade of "A" through "F" is assigned to a roadway facility based on volumes over a specific time period and the design capacity of that facility over the same period. As the LOS values descend from A to F, they represent progressively worsening traffic flow conditions.

Encroachment permits would be required by all local jurisdictions that lie within the Project study area for the construction activities associated with the Proposed Action and Alternatives.

TABLE D-14. TRAFFIC AND TRANSPORTATION LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

Applicable Law	Description
Federal	
CFR Title 14 Aeronautics and Space, Part 77: Objects Affecting Navigable Airspace (14 CFR 77)	This regulation establishes standards for determining physical obstructions to navigable airspace; sets noticing and hearing requirements; and provides for aeronautical studies to determine the effect of physical obstructions to the safe and efficient use of airspace.
CFR Title 49, Subtitle B	49 CFR Subtitle B includes procedures and regulations pertaining to interstate and intrastate transport (including hazardous materials program procedures) and provides safety measures for motor carriers and motor vehicles that operate on public highways.
State	
CVC Division 2, Chapter 2.5; Division 6, Chapter 7; Division 13, Chapter 5; Division 14.1, Chapter 1 & 2; Division 14.8; Division 15	This code includes regulations pertaining to licensing, size, weight, and load of vehicles operated on highways; safe operation of vehicles; and the transportation of hazardous materials.
California Streets and Highway Code, Division 1, Chapter 3; Division 2, Chapter 5.5	This code includes regulations for the care and protection of State and county highways and provisions for the issuance of written permits.
Local	
Kern County Encroachment Permits	Encroachment permits must be obtained to proceed with construction within the County in addition to the cities located within the construction work zone.
Kern County CMP	Level of Service "E" has been established as the minimum system-wide LOS traffic standard.
Los Angeles County Encroachment Permits	Encroachment permits must be obtained to proceed with construction within the County in addition to the cities located within the construction work zone.
Los Angeles County CMP	A significant impact will occur if project traffic degrades the LOS of a facility to LOS "E" or worse, unless a facility already operates at LOS "E" or worse, as defined by the Congestion Management Program.
City of Los Angeles Department of Transportation	Quantitative impacts can occur within LOS C, D, E, or F, but LOS E and F are considered unacceptable conditions.
City of Santa Clarita Traffic and Transportation	Quantitative impacts can occur within LOS D, E, or F but LOS E and F are considered unacceptable conditions for major roadways.

D.11 VISUAL RESOURCES

D.11.1 FEDERAL

Angeles National Forest Land Management Plan

Program Strategies and Tactics related to landscape aesthetics included in Forest-specific Design Criteria, Place-specific Standards in Part 2 of the ANF Forest Plan that are applicable to the Proposed Action and Alternatives include the following:

ANF S1 - Pacific Crest Trail - Protect scenic integrity of foreground views as well as from designated viewpoints. Where practicable, avoid establishing nonconforming land uses within the viewshed of the trail.

Strategies related to landscape aesthetics included in Appendix B in Part 2 of the Forest Plan that are applicable to the Proposed Action and Alternatives include the following:

LM 1 - Landscape Aesthetics - Manage landscapes and built elements to achieve scenic integrity objectives:

- Use best environmental design practices (BEIG) to harmonize changes in the landscape and advance environmentally sustainable design solutions.
- Mitigate ground disturbance to maintain scenic integrity objectives.

LM 2 - Landscape Restoration - Restore landscapes to reduce visual effects of nonconforming features:

- Prioritize landscape restoration activities in key places. Integrate restoration activities with other resource restoration.

LM 3 - Landscape Character - Maintain the character of key places to preserve their intact nature and valued attributes:

- Maintain the integrity of the expansive, unencumbered landscapes and traditional cultural features that provide the distinctive character of the place.
- Promote the planning and improvement of infrastructure along federal and State scenic travel routes.
- Promote the consideration of key landscape character in other landscape analyses such as Fireshed.

Part 2 of the Forest Plan identifies the Scenery Management System in the Land Management Plan Strategy, Suitable Land Uses section, page 17, as follows:

The Scenery Management System (SMS) is a tool for integrating the benefits, values, desires, and preferences regarding aesthetics and scenery for all levels of land and resource management planning. People are concerned about the quality of their environment and the aesthetic values of landscapes, particularly the scenery and spiritual values. Scenic integrity objectives have been designated for all areas of the national forest. At the project level, all national forest activities are subject to review of the scenic integrity objectives.

Part 2, Appendix B, of the Forest Plan includes a map of the ANF SIOs. Refer also to the Visual Resources Technical Report, Appendix D, Agency Management Objectives and Compatibility Map, for mapping of the ANF SIOs. Aesthetic Management Standards required by 36 CFR 219 included in Part 3 of the Forest Plan that are applicable to the Proposed Action and Alternatives include the following:

S9 - Design management activities to meet the Scenic Integrity Objectives (SIOs) shown on the Scenic Integrity Objectives Map.

S10 - Scenic Integrity Objectives will be met with the following exceptions:

- Minor adjustments not to exceed a drop of one SIO level are allowable with the Forest Supervisor's approval.
- Temporary drops in more than one SIO level may be made during and immediately following project implementation providing they do not exceed three years in duration.

California Desert Conservation Area Plan 1980, as Amended

The California Desert Conservation Area Plan 1980 as Amended states in Chapter 3, Recreation Element, Visual Resources Management Program, that:

- Appropriate levels of management, protection, and rehabilitation on all public lands in the CDCA will be identified, commensurate with visual resource management objectives in the multiple-use class guidelines.
- Proposed activities will be evaluated to determine the extent of change created in any given landscape and to specify appropriate design or mitigation measures using the Bureau's contrast rating process.

West Mojave Plan

The West Mojave Plan Record of Decision for the West Mojave Plan do not include regulations or standards pertaining to visual resources.

D.11.2 STATE

No applicable policies were identified relative to visual resources.

D.11.3 REGIONAL/LOCAL

Kern County General Plan

Circulation Element:

Implementation Measure D: The County has adopted a Scenic Corridor Combining District to designate areas that contain unique visual and scenic resources as viewed from a major highway or freeway and for the regulation of off-site advertising signs, where the siting of such signs needs to be reviewed on a case-by-case basis to safeguard the scenic qualities of the natural environment and the visual qualities of primary entranceways into the County.

Los Angeles County General Plan (1974)

Scenic Highways Element:

As stated in this Element, "It shall be the policy of Los Angeles County to:

1. Establish a countywide scenic highway system in urban and rural areas.
2. Encourage utilization of appropriate existing roads as scenic highways rather than the construction of new routes.
3. Protect and enhance esthetic resources within corridors of designated scenic highways.
4. Establish and maintain rural scenic highways to provide access to scenic resources and serve recreational users.
5. Establish and maintain urban scenic highways to provide access to interesting and esthetic

- manmade features, historical and cultural sites, and urban open space areas.
6. Provide a comprehensive scenic highway system which safely accommodates various forms of transportation compatible with scenic highway criteria and standards.
 7. Develop and apply standards to regulate the quality of development within corridors of designated scenic highways.
 8. Remove visual pollution from designated scenic highway corridors.
 9. Require the development and use of esthetic design considerations for road construction, reconstruction or maintenance for all designated scenic highways.
 10. Increase governmental commitment to the designation of scenic highways and protection of scenic corridors.
 11. Encourage the fair distribution of social and economic costs and benefits associated with scenic highways.”

Antelope Valley Areawide General Plan

In Part V. Policy Statements, the general plan states:

Community Design

Compatibility and Proximity of Urban Activities

62. Mitigate where possible undesirable impacts of adjacent land uses (i.e., noise interruption, visual intrusion, and airborne emissions) through utilization of appropriate buffers, building codes and standards.

Relationship of Urban and Natural Environments

63. Carefully integrate physical land use development into the natural environmental setting.

Physical Appearance/Community Image

65(b). Transmission lines should be located underground where feasible.

Scenic Highways

93. Implement the County Scenic Highways Element (as amended) in stages as funds become available.

Santa Clarita Valley Area Plan

The Community Design Element states:

Compatibility and Proximity of Urban Activities

1.1 Mitigate where possible undesirable impacts of development on adjacent land uses through utilization of appropriate buffers, building codes and standards.

Relationship of Urban and Natural Environments

2.1 Carefully integrate physical development in rural areas into the natural environment setting.

Physical Appearances – Community Image

3.2(b) Transmission lines should be located underground where feasible.

City of San Fernando Revised General Plan

The City of San Fernando Revised General Plan does not include any goals, objectives, or policies pertaining to visual resources, with the exception of an Open Space/Conservation/Parks-Recreation Element goal to “give aesthetic variety and distinction to the community by adding relief to developed

areas through the conservation of existing and the development of new landscaping particularly along the urban corridors.”

City of Lancaster 2030 General Plan

Scenic Resources Element

Policy 3.8.1 - Preserve views of surrounding ridgelines, slope areas and hilltops, as well as other scenic vistas.

City of Los Angeles General Plan

The City of Los Angeles General Plan, Conservation Element, Section 15: Land Form and Scenic Vistas states:

Objective: protect and reinforce natural and scenic vistas as irreplaceable resources and for the aesthetic enjoyment of present and future generations.

Policy: continue to encourage and/or require property owners to develop their properties in a manner that will, to the greatest extent practical, retain significant existing land forms and unique scenic features, and/or make possible public view or other access to unique features or scenic views.

Program 2: Planning and construction of roads, utilities and other public projects, especially projects that are within or impact natural terrain and/or scenic areas.

The City of Los Angeles General Plan, Transportation Element, Chapter IV, Goals, Objectives and Policies, Goal C, states:

An integrated system of pedestrian priority street segments, bikeways, and scenic highways which strengthens the City’s image while also providing access to employment opportunities, essential services, and open space.

Objective 11: Preserve and enhance access to scenic resources and regional open space.

Policy 11.1: Designate scenic highways and scenic byways which merit special consideration for protection and enhancement of scenic resources.

Policy 11.2: Provide for protection and enhancement of views of scenic resources along or visible from designated scenic highways through implementation of guidelines set forth in the Transportation Element.

Policy 11.3: Consider aesthetics and scenic preservation in the design and maintenance of designated scenic highways and of those scenic byways designated in Community Plans.

Policy 11.4: Establish Scenic Corridor Plans, where appropriate, which set forth corridor boundaries and development controls in harmony with each corridor’s specific scenic character.

City of Palmdale General Plan

The Environmental Resources Element, Part G, includes a section on Scenic Roadway Designations that states:

The City shall protect scenic highways in the Planning Area. Scenic highways and roads have been identified in Policy ER 1.2.2 of Section 2. They include the Antelope Valley Freeway south of Avenue R, Barrel Springs Road, Tierra Subida Avenue, Sierra Highway (south of Avenue S), Elizabeth Lake Road, Pearblossom Highway, Bouquet Canyon Road, and Godde Hill Road. These roadways possess scenic qualities that have provided outdoor recreation experience to travelers and hikers.

The City will establish design criteria for designated scenic highways that require specific design standards for nearby development. These standards could include the following: height limits to preserve view corridors, maintenance of roadside landscaping, limits on grading activities along highways, and the prohibition of overhead utility ROWs along scenic highways. In addition, a visual impact analysis may be required for developments within the overlay zone in order to preserve the visual qualities of scenic routes.

City of Santa Clarita General Plan

The Community Design Element states:

Statement of Issues, Ridgeline Protection

Ridgelines within the Valley are a significant design feature that should be protected. Development on significant ridgelines should be prohibited or severely limited. Significant ridgelines give the residents the feeling of protection and the country feeling. If these significant ridgelines are permitted to develop, with any intensity at all, this feeling will be lost forever. Major ridgelines should be identified and protected. In conjunction with significant ridgeline protection, consideration shall be given to the creation of a set of criteria to regulate development on hillsides adjacent to significant ridgelines and other prominent areas with the Valley.

Goals and Policies, Infrastructure

Goal 11: To achieve a coordinated and efficient infrastructure system which is visually unobtrusive while designed to meet the current and future needs of the planning area.

Policies: 11.1 Encourage placement of transmission power lines and other mechanical equipment underground, where feasible, to maximize safety and minimize visual distraction.

11.8 Examine the use of the land under high power transmission lines for landscaping, tree farms, additional safe recreation areas, and other appropriate feasible uses.

11.9 Encourage single pole transmission towers and cellular poles, and avoid reinforced structural support bases.

Santa Clarita Beautification Master Plan (2001)

The City Council adopted the Santa Clarita Beautification Master Plan on December 11, 2001. Under Part C. Citywide Improvement Projects, the master plan states:

4. Utility Lines (Underground) - Description: This includes under-grounding all utility lines along primary and secondary corridors. - Assumptions: The City will periodically underground sections of [utility lines along] roadways as grant money allows, however these grants cannot finance all work. - Quantity: Unknown - Estimated Budget: Approximately \$1 million/linear mile for lines below 66 kV and \$3 million/ linear mile for higher voltage.

Rosamond CSD Park System Master Plan (2007)

Section 4.4.3 Resource Zones of the Rosamond CSD Park System Master Plan identifies Resource Management areas on the Park and Open Space Influences Map, both within the CSD and within a "Sphere of Influence." These areas are defined as "Primarily open space lands containing important resource values, such as wildlife habitat, scenic values, or watershed recharge areas. These areas may be characterized by physical constraints, or may constitute an important watershed recharge area or wildlife habitat or may have value as a buffer between resource areas and urban lands." The Park System Master Plan does not include any goals, objectives, or policies pertaining to visual resources.

D.12 CULTURAL RESOURCES

D.12.1 FEDERAL

National Historic Preservation Act

The National Historic Preservation Act (NHPA), as amended (16 USC 470f) is the principal federal law in the United States protecting cultural resources. Section 106 of the NHPA directs all federal agencies to take into account the effects of their undertakings (i.e., actions, financial support, and authorizations) on properties included in or eligible for the National Register of Historic Places (National Register).

The Advisory Council on Historic Preservation (ACHP) regulations at 36 CFR part 800 implement Section 106 of the NHPA. These regulations establish the National Register as a planning tool to help federal agencies evaluate cultural resources in consultation with the State Historic Preservation Officer (SHPO) and the ACHP. The criteria for determining whether cultural resources are eligible for listing in the National Register is provided in 36 CFR 60.4.

For the BRRTP, the Angeles National Forest (ANF) is the lead federal agency for Section 106 compliance. Compliance with Section 106 is required whenever a project has a federal nexus, meaning that the project is on federal land, uses federal funds, or is permitted by a federal agency. The USFS proposes to issue a 50-year term Special Use Authorization (SUA) for the BRRTP and to issue Temporary SUAs for related construction activities outside the right-of-way (ROW). The BLM proposes to issue a new ROW Grant for an approximately four-mile-long, 200-foot wide segment for the construction, operation, and maintenance of the 230 kV transmission line. Both activities constitute undertakings as defined in 36 CFR 800.16(y) and require implementing Section 106.

The ANF, BLM, LADWP, and California SHPO are in the process of preparing a Programmatic Agreement (PA) outlining procedures, tasks, standards, and responsibilities for complying with Section 106, during planning, construction, operation, and maintenance of the BRRTP.

Federal Land Policy and Management Act of 1976

The Federal Land Policy and Management Act of 1976 (FLPMA) (43 U.S.C. 1701) requires the BLM and USFS to manage their lands on the basis of multiple use in a manner that will "protect the quality of...historical...resources and archaeological values." FLPMA compels agencies to manage all cultural resources on public lands through the land management planning process.

Archaeological Resources Protection Act of 1979

The Archaeological Resources Protection Act of 1979 (16 USC 470 aa-mm) (ARPA) establishes civil and criminal penalties for the unauthorized excavation, removal, damage, alteration, or defacement of archaeological resources; prohibits trafficking in resources from public lands; and directs federal agencies to establish educational programs on the importance of archaeology. The act also establishes permit

requirements for removal or excavation of archaeological resources from federal lands. The law applies to archaeological resources more than 100 years old found on public lands. No distinction is made regarding National Register eligibility.

American Indian Religious Freedom Act of 1978

The American Indian Religious Freedom Act of 1978 (AIRFA) requires federal agencies to consult Native American groups when a proposed land use might conflict with traditional Indian religious beliefs or practices, to avoid interference with these beliefs to the extent possible, and to maintain access to religious or sacred areas whenever feasible.

Native American Graves Protection and Repatriation Act of 1990

The Native American Graves Protection and Repatriation Act of 1990 (NAGPRA) (25 U.S.C. 3001) provides a process for federal agencies to return certain Native American cultural items – human remains, funerary objects, sacred objects, or objects of cultural patrimony – to lineal descendants and culturally affiliated Indian tribes. NAGPRA includes provisions for unclaimed and culturally unidentifiable Native American cultural items, intentional excavation and unanticipated discovery of Native American cultural items on federal lands, and penalties for noncompliance and illegal trafficking.

Executive Orders

Issued in 1971, Executive Order (E.O.) 11593 directs land-holding federal agencies to identify and nominate historic properties to the National Register and requires that these agencies avoid damaging historic properties that might be eligible to the National Register. It also directs agencies to treat resources eligible to the National Register as if they were already listed.

E.O. 13007, issued in 1996, directs federal agencies responsible for managing federal lands to accommodate access to, and ceremonial use of, Indian sacred sites by Indian religious practitioners; avoid adversely affecting the physical integrity of such sacred sites; and maintain the confidentiality of sacred sites.

E.O. 13175, Consultation and Coordination with Tribal Governments, issued in 2000, directs federal agencies to establish regular and meaningful consultation and collaboration with Tribal officials in the development of federal policies that have Tribal implications, to strengthen the United States government-to-government relationships with Indian tribes, and to reduce the imposition of unfunded mandates upon Indian tribes.

D.12.2STATE

CEQA requires that the Lead Agency determine if a proposed project would cause a substantial adverse change in the significance of a historical resource. Historical resources are those resources listed in or determined to be eligible for listing in the California Register. A historical resource may be listed in the California Register if it meets any of the following criteria:

1. It is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
2. It is associated with the lives of persons important in California's past;
3. It embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic value; or
4. It has yielded or is likely to yield information important in prehistory or history.

Under CEQA, the Lead Agency must also determine whether a proposed project would have a significant effect on unique archaeological resources. PRC 21082.2(g) states that a:

“‘unique archaeological resource’ means an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

1. Contains information needed to answer important scientific research questions and that there is demonstrable public interest in that information.
2. Has a special and particular quality such as being the oldest of its type or the best available example of its type.
3. Is directly associated with a scientifically recognized important prehistoric or historic event or person.”

A non-unique archaeological resource does not meet these criteria and does not need to be given further consideration other than simple recording unless it happens to qualify as a historical resource.

The disposition of human remains is governed by Section 7050.5 of the California Health and Safety Code (HSC) and Sections 5097.94 and 5097.98 of the Public Resources Code (PRC), and falls within the jurisdiction of the Native American Heritage Commission (NAHC). If human remains are discovered, the County Coroner must be notified immediately and there should be no further disturbance to the site where the remains were found. If the remains are determined by the coroner to be Native American, the coroner is responsible for contacting the NAHC within 24 hours. The NAHC, pursuant to Section 5097.98, will immediately notify those persons it believes to be most likely descended from the deceased Native Americans so they can inspect the burial site and make recommendations for treatment or disposal.

D.12.3 REGIONAL/LOCAL

Kern County General Plan

The Kern County General Plan states that the County’s policy is to “promote the preservation of cultural and historic resources which provide ties with the past and constitute a heritage value to residents and visitors.”

Los Angeles County General Plan

The Los Angeles County General Plan embraces the importance of protecting cultural heritage resources and is guided in development decisions by federal and State programs that officially recognize these resources. Goals identified in the General Plan include: supporting an inter-jurisdictional collaborative system that protects enhances cultural resources; supporting the preservation and rehabilitation of historic buildings; ensuring proper notification procedures to Native American tribes; and promoting public awareness of the County’s cultural heritage resources.

Portions of Project alternatives pass through several cities: Palmdale, Lancaster, Santa Clarita, San Fernando, and Los Angeles. All of these cities have developed within their existing General Plans elements that address historic preservation or archaeological resources. These elements provide specific guidelines set forth by the city to address cultural resources found within the city limits. In addition, the municipal codes for each city refer to historic preservation to varying degrees. For the most part, these codes and plans rely on CEQA and federal regulations for specific guidance when addressing cultural resources and provide general guidelines for mitigation of resources should they be impacted by a project.

D.13 WILDFIRE AND FUELS

D.13.1 FEDERAL

Angeles National Forest- Fire Management Plan

The Fire Management Plan documents the fire management program on the ANF. It provides a framework for the management of wildland fire and prescribes fire and hazard fuel reduction as a tool to safely accomplish the resource protection and management objective of the ANF as described in the 2005 Land Management Plan.

Bureau of Land Management-Fire Management Plan

The fire plan for the Bureau of Land Management Antelope Valley Fire Management Unit states that its highest priority is to ensure the safety of fire-fighting personnel and other publics in the area. The BLM states that it will take any action necessary to prevent loss of life or significant real property being taken. Secondly, all wildfires will be suppressed in grazing allotments. Further details of the BLM Antelope Valley fire management plan is discussed in the Fire Management Unit document located at the BLM Ridgecrest field office.

Title 14 CFR Section 91.137, Temporary Flight Restrictions in Proximity to Disaster/Hazard Areas

Title 14 CFR Section 91.137 allows an administrator to issue a Notice to Airmen (NOTAM) designating an area within which temporary flight restrictions apply. When a NOTAM is issued, no person may operate an aircraft within the designated area unless that aircraft is participating in the hazard relief activities and is being operated under the direction of the official in charge of on-scene emergency response activities. During a wildfire, all helicopter construction and maintenance equipment would be prohibited from flying in the designated hazard area.

D.13.2 STATE

General Order 95: Rules for Overhead Electric Line Construction

In California, the California Public Utilities Commission has adopted General Order 95 rather than the National Electric Safety Code as the key electric safety standard for the State. It was adopted in 1941 and updated most recently in 2006. This Order includes safety standards for overhead electric lines, including minimum distances for conductor spacing, minimum conductor ground clearance, standards for calculating maximum sag, and vegetation clearance requirements.

California Department of Forestry and Fire Protection (CAL FIRE)

CAL FIRE has a primary objective of reducing wildfire occurrence and enforcing fire hazard clearance standards around structures and utilities in order to protect the public from loss of life, property, and resources. Within CAL FIRE jurisdiction areas, the LE-38 Fire Safety Inspection Program is implemented for community outreach enforcement of fire safe codes. These laws include the California Public Resources Codes (PRC) 4292 and 4293 that define defensible space clearance requirements around aboveground power lines. Listed below are the clearance requirements pursuant to the California Public Resource Code:

- *PRC 4292, Powerline Hazard Reduction*, requires a minimum 10-foot clearance from around the base of dead-end or corner poles.
- *PRC 4293, Powerline Conductor Clearance*, requires a 10-foot clearance for any line that is operating at 110 kV or greater.

California Code of Regulations Title 14, Section 1254

The Proposed Action and Alternatives structures would be primarily exempted from the clearance requirements set forth in PRC 4292, with the exception of cable poles and dead-end structures. Flammable vegetation and materials located wholly or partially within the firebreak space shall be treated as follows:

- At ground level – remove flammable materials including, but not limited to, ground litter, duff and dead or desiccated vegetation that will propagate fire.
- From 0 to 2.4 m (0 to 8 feet) above ground level remove flammable trash, debris or other materials, grass, herbaceous and brush vegetation. All limbs and foliage of living trees shall be removed up to a height of 2.4 m (8 feet).
- From 2.4 m (8 feet) to the horizontal plane of the highest point of the conductor attachment, remove dead, diseased or dying limbs and foliage from living sound trees and any dead, diseased or dying trees in their entirety.

D.13.3 REGIONAL/LOCAL

Los Angeles County General Plan

The Safety Element (December 1990) of the General Plan is the policy document that outlines fire protection standards. Applicable to the Proposed Action and Alternatives would be the County of Los Angeles Fire Department Transmission Line Guidelines, which set forth minimum clearance requirements around transmission line structures identical to those set forth in CCR 14 Section 1254.

Los Angeles County Fire Plan

The State Board of Forestry and CAL FIRE have drafted a comprehensive update of the fire plan for wildland fire protection in California. The County Fire Department must define and provide a particular level of service and, as an agent of CAL FIRE in Los Angeles County must, at a minimum, deliver a fire protection system that provides an equal level of protection to lands of similar type in the State Responsibility Area.

Los Angeles County Fire Department Prescribed Fuels Management Program

This Program outlines five vegetation management procedures: prescribed fire, mechanical brush removal, chemical application, biological control and hand clearing.

LA County Code, Title 32—Fire Code

Sections 317.1.1 and 317.1.2 of this Code are relevant to power line clearance and are identical to State PRC Sections 4292 and 4293, respectively.

Kern County General Plan

The Safety Element (March, 2007) requires that all developments comply with the requirements of the Kern County Fire Department or other appropriate agency regarding access and fire protection facilities. According to the Safety Element, all fuel and firebreaks are required to meet the minimum design standards of the Kern County Fire Chief, who may require a fire plan for development that would occur during the critical fire season.

D.14 ELECTRIC AND MAGNETIC FIELDS

D.14.1 FEDERAL

Numerous internationally recognized scientific organizations and independent regulatory advisory groups have conducted scientific reviews of the EMF research literature.³ Without exception, these major reviews have reported that the body of data, as large as it is, does not demonstrate that exposure to power-frequency (60 Hertz (Hz) in the U.S.) magnetic fields causes cancer or other health risks, although the possibility cannot be dismissed. Most reviews recommend further research, and, appropriately, research is ongoing worldwide. The weakness of the reported associations, the lack of consistency, and the severe limitations in exposure assessment in the epidemiology studies, together with the lack of support from laboratory studies, were key considerations in the findings of the scientific reviews.

U.S. Federal EMF Program

Seven years later, the 1999 NIEHS report stated the following in its conclusion section:

“The scientific evidence suggesting that ELF-EMF exposures pose any health risk is weak. The strongest evidence for health effects comes from associations observed in human populations with two forms of cancer: childhood leukemia and chronic lymphocytic leukemia in occupationally exposed adults. While the support from individual studies is weak, the epidemiological studies demonstrate, for some methods of measuring exposure, a fairly consistent pattern of a small, increased risk with increasing exposure that is somewhat weaker for chronic lymphocytic leukemia than for childhood leukemia. In contrast, the mechanistic studies and the animal toxicology literature fail to demonstrate any consistent pattern across studies although sporadic findings of biological effects (including increased cancers in animals) have been reported. No indication of increased leukemia in experimental animals has been observed.

The lack of connection between the human data and the experimental data (animal and mechanistic) severely complicates the interpretation of these results. The human data are in the “right” species, are tied to “real-life” exposures and show some consistency that is difficult to ignore. This assessment is tempered by the observation that given the weak magnitude of these increased risks, some other factor or common source of error could explain these findings. However, no consistent explanation other than exposure to ELF-EMF has been identified.

Epidemiological studies have serious limitations in their ability to demonstrate a cause and effect relationship whereas laboratory studies, by design, can clearly show that cause and effect are possible. Virtually all of the laboratory evidence in animals and humans and most of the mechanistic work done in cells fail to support a causal relationship between exposure to ELF-EMF at environmental levels and changes in biological function or disease status. The lack of consistent, positive findings in animal or mechanistic studies weakens the belief that this association is actually due to ELF-EMF, but it cannot completely discount the epidemiological findings.

The NIEHS concludes that ELF-EMF exposure cannot be recognized as entirely safe because of weak scientific evidence that exposure may pose a leukemia hazard. In our opinion, this finding is insufficient to warrant aggressive regulatory concern. However, because virtually everyone in the

³ CPUC/CDHS, 1989; IRPA/TNIRC, 1990; ACGIH, 1991; EPA, 1990; EPA-SAB, 1992; CIRRPC, 1991; EMHEC, 1992; NRPB, 1992; Illinois, 1992; Colorado, 1992; Case, 1992; ORAU, 1992, 1993; INSERM 1993; Danish Ministry of Health, 1993; Universities Consortium on Electromagnetic Fields, Connecticut (February 1994); National Radiological Protection Board, United Kingdom (April 1994); American Medical Association (January 1995); American Physical Society (May 1995); American Cancer Society (January 1996); Virginia Department of Health (February 1996); National Academy of Sciences (January, 1997); NIEHS Director's Report to Congress (June, 1999).

United States uses electricity and therefore is routinely exposed to ELF-EMF, passive regulatory action is warranted such as a continued emphasis on educating both the public and the regulated community on means aimed at reducing exposures.”

National Electrical Safety Code-Induced Currents and Shock Hazards

The National Electrical Safety Code (NESC) specifies that transmission lines be designed to limit the power line field strength at ground level such that the short circuit current from vehicles or large objects near the line will be no more than 5 mA. This requirement serves to limit the magnitude of electrical shock that the public could encounter from induced currents on large ungrounded metal objects in the vicinity of transmission lines. Although the NESC is titled as a “National” code it is intended as a guide standard and does not constitute a regulation unless it is adopted and codified by state or municipal governments.

D.14.2STATE

California Public Utility Commission (CPUC) Guidelines

LADWP is a municipal utility and therefore is not regulated by the California Public Utilities Commission (CPUC). However, in regards to EMF analysis and policy, LADWP would follow CPUC General Order No. 95 (G.O. 95), Rules for Overhead Electric Line Construction, as the relevant standard for transmission lines. Overhead transmission lines must meet the requirements of the CPUC, General Order No. 95, Rules for Overhead Electric Line Construction. This design code addresses shock hazards to the public by providing guidelines on minimum clearances to be maintained for practical safeguarding of persons during the installation, operation, or maintenance of overhead transmission lines and their associated equipment.

On November 2, 1993, the California Public Utilities Commission (CPUC) issued decision 93-11-013. The purpose of this decision was to establish rules and procedures for addressing the potential health effects of electric and magnetic fields of utility electrical facilities.

“The CPUC decision is based upon a regulatory strategy that:

- Sets the foundation for obtaining answers to key questions;
- Provides for public education and information;
- Takes public concerns into account;
- Allows for appropriate interim responses;
- Is consistent with existing knowledge;
- Does not disproportionately allocate public resources;
- Can be updated as new information becomes available; and
- Allows for an open decision-making process which includes public participation.”

Decision 93-11-013 specifically requires the state’s investor owned electric utility companies to implement:

- No-cost and low-cost steps to reduce EMF levels;
- Workshops to develop EMF design guidelines⁴;

⁴ These workshops were held in 1994 and included the participation of a wide range of stakeholders.

- Uniform residential and workplace EMF measurement programs;
- Support of various health research programs.

D.14.3 REGIONAL/LOCAL

Local agencies do not have regulations regarding electrical effects of transmission lines.

D.15 SOCIAL AND ECONOMIC CONDITIONS

D.15.1 FEDERAL

Executive Order 12898

Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," focuses federal attention on the environmental and human conditions of minority populations and calls on agencies to develop strategies to achieve environmental justice as part of this mission. The U.S. Environmental Protection Agency (EPA) subsequently developed guidelines to assist all federal agencies to develop strategies to address the issue (Council on Environmental Quality 1997). Federal agencies are required to address disproportionately high and adverse human health or environmental effects of their programs, policies and activities on low-income populations and minority populations.

Forest Service Handbook 1909.17 - Economic and Social Analysis Handbook

This handbook provides guidance on the evaluation of economic and social effects of policies, plans, programs, and projects with the goal of promoting consistent use of social and economic analysis in Forest Service Projects. In addition to providing guidance on using economic estimates and measures, the document also provides direction on selecting and analyzing social variables. Social variables discussed in the Forest Service Handbook include: Lifestyles; Attitudes; Beliefs and Values; Population; Housing Characteristics; Employment; Social Organization; and Land Use Patterns (USFS 2005). Some of these variables, such as Population, Housing, and Employment, are addressed in this section.

D.15.2 STATE

No specific applicable policies were identified relative to social and economic conditions.

D.15.3 REGIONAL/LOCAL

Kern County General Plan

The Kern County General Plan states:

"Encourage economic development that creates jobs and capital investments in urban and rural areas that benefits residents, businesses, and industries, as well as ensuring future governmental fiscal stability while encouraging new development to utilize existing infrastructure and services wherever feasible in the County's urban areas."

The Kern County General Plan does not include any specific socioeconomic elements or policies.

Los Angeles County General Plan

The Economic Development element of the Los Angeles County General Plan includes as one of its goals:

“64. Encourage a strong diversified economy that will provide business opportunities, an adequate number of jobs for this county’s labor force and an improved standard of living.”

City of Lancaster General Plan

The City of Lancaster General Plan 2030 does not address electric transmission facilities, nor socioeconomic aspects of their provision.

City of Los Angeles General Plan

The City of Los Angeles General Plan does not address socioeconomic aspects of electric transmission lines.

City of Palmdale General Plan

The City of Palmdale General Plan does not address electric transmission facilities, nor socioeconomic aspects of their provision.

City of Santa Clarita General Plan

The Economic Revitalization Element of the City of Santa Clarita General Plan contains nine goals, including the following:

“GOAL 1: To achieve a balanced mix of manufacturing, commercial, retail, cultural, entertainment, and service uses that result in a diversified, stable, and environmentally sound local economic base.

GOAL 4: To serve existing and new economic growth, the City should pursue timely and equitable strategies to provide financing of basic, community, and public safety infrastructure.

GOAL 5: To ensure the City’s present and future fiscal balance of municipal revenues and expenditure is maintained.

GOAL 7: To promote revitalization for the City’s long-term economic stability.”

D.16 BIOLOGICAL RESOURCES

D.16.1 FEDERAL

Endangered Species Act of 1973; 16 USC § 1531 et seq.; 50 CFR Parts 17 and 222

This act includes provisions for protection and management of species that are federally listed as threatened or endangered or proposed for such listing and of designated critical habitat for these species. The administering agency for the above authority for non-marine species is the USFWS.

Migratory Bird Treaty Act: 16 USC § 703-711; 50 CFR Subchapter B

The Migratory Bird Treaty Act (MBTA) includes provisions for protection of migratory birds, including basic prohibitions against any taking not authorized by federal regulation. The administering agency for the above authority is the USFWS. The law contains no requirement to prove intent to violate any of its provisions. Wording in the MBTA makes it clear that most actions that result in “taking” or possession (permanent or temporary) of a protected species can be a violation of the act. The word “take” is defined as “pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to pursue, hunt, shoot, wound,

kill, trap, capture, or collect (including nests, eggs, and feathers).” The provisions of the MBTA are nearly absolute; “except as permitted by regulations” is the only exception.

Bald and Golden Eagle Protection Act

Bald eagle protection began in 1940 with the passage of the Eagle Protection Act, which was later amended to include golden eagle and was renamed. The Bald and Golden Eagle Protection Act makes it unlawful to import, export, take, sell, purchase, or barter any bald eagle or golden eagle, their parts, products, nests, or eggs. Take includes pursuing, shooting, poisoning, wounding, killing, capturing, trapping, collecting, molesting, or disturbing. Exceptions may be granted by USFWS for scientific or exhibition use, or for traditional and cultural use by Native Americans. However, no permits may be issued for import, export, or commercial activities involving eagles.

Clean Water Act of 1977; 33 USC § 1251-1376; 30 CFR

The federal Clean Water Act (CWA) is an amendment to the Federal Water Pollution Control Act of 1972, which outlined the basic structure for regulating discharges of pollutants to waters of the United States. Several sections of this act pertain to regulating impacts to wetlands. The discharge of dredged or fill material into waters of the United States is subject to permitting under Section 404. Section 401 specifies additional requirements for permit review, particularly at the State level. The CWA is administered by the U.S. Environmental Protection Agency (EPA) and U.S. Army Corps of Engineers (USACE).

Clean Water Act of 1977; Section 401

CWA Section 401 gives individual states the authority to issue, waive, or deny certification that a proposed activity is in conformance with State water quality standards. Projects, including those that require permits from USACE under Section 404, are reviewed by the State’s Regional Water Quality Control Boards (RWQCBs).

Clean Water Act of 1977; Section 404

USACE and EPA regulate the placement of fill and dredged materials into waters of the United States under CWA Section 404. Waters of the United States include lakes, rivers, streams, and their tributaries, as well as wetlands. Tributary waters subject to USACE jurisdiction extend to the ordinary high water mark on opposing channel banks. Wetlands are defined for regulatory purposes as areas “inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.” Project proponents must obtain a permit from USACE for all discharges of dredged or fill material into waters of the United States, including wetlands, before proceeding with a proposed action. USACE may either issue individual permits on a case-by-case basis or general permits at a program level. General permits are pre-authorized and are issued to cover similar activities expected to cause only minimal adverse environmental effects. Nationwide permits (NWP) are a type of general permit issued to cover particular fill activities. NWPs have a set of conditions that must be met for the permits to apply to a particular project and specific conditions that apply to each NWP.

Executive Order 11990, Protection of Wetlands (May 24, 1977)

This order provides for the protection of wetlands. The administering agency for the above authority is USACE. If wetland impacts cannot be avoided, then all practicable measures to minimize harm to those wetlands must be included and documented in the final environmental document for the proposed project.

Executive Order 13112, Invasive Species (February 3, 1999)

Executive Order 13112 calls on Executive Branch agencies to work to prevent and control the introduction and spread of invasive species. Non-native flora and fauna can cause substantial changes to ecosystems, upset the ecological balance, and have the potential to cause economic harm. Highway corridors provide opportunities for the movement of invasive species through the landscape.

Rivers and Harbors Act § 10; 33 USC § 201 et seq.

This act protects waters of the United States. The administering agency for the above authority is the USACE.

D.16.2STATE

California Endangered Species Act of 1984, California Fish and Game Code § 2050-2098

This act includes provisions for the protection and management of species listed by the State as endangered or threatened, or designated as candidates for such listings. This act includes a requirement for consultation “to ensure that any action authorized by a state lead agency is not likely to jeopardize the continued existence of any endangered or threatened species... or result in the destruction or adverse modification of habitat essential to the continued existence of the species” (§ 2090). Plants of California declared to be endangered, threatened, or rare are listed at 14 CCR §670.2. Animals of California declared to be endangered, threatened, or rare are listed at 14 CCR §670.5. The administering agency for the above authority is the California Department of Fish and Game (CDFG).

Native Plant Protection Act of 1977; California Fish and Game Code §1900 et seq.

This act prohibits importation of rare and endangered plants into California, take of rare and endangered plants, and sale of rare and endangered plants. The California Endangered Species Act (CESA) defers to the California Native Plant Protection Act (CNPPA), which ensures that State-listed plant species are protected when State agencies are involved in projects subject to CEQA. In this case, plants listed as rare under the CNPPA are not protected under CESA, but rather under CEQA.

California Species Preservation Act of 1978; California Fish and Game Code § 900-903

This act includes provisions for the protection and enhancement of the birds, mammals, fish, amphibians, and reptiles of California. The administering agency for the above authority is the CDFG.

California Fish and Game Code § 3511 and 5050

These code sections prohibit the taking or possessing of birds and reptiles listed as “fully protected.” The administering agency for the above authority is the CDFG.

California Fish and Game Code § 1930-1933

These code sections provide for the Significant Natural Areas program and database. The administering agency for the above authority is the CDFG.

California Fish and Game Code §1600-1616 – Streambed Alteration Agreement

This code requires that any person, State or local government agency, or public utility notify CDFG and obtain a streambed alteration agreement before they begin any construction project that will divert, obstruct, or change the natural flow or the bed, channel, or bank of any river, stream, or lake, use

materials from a streambed, or result in the disposal or disposition of debris, waste, or other material containing crumbled, flaked, or ground pavement where it can pass into any river, stream, or lake. In general, CDFG jurisdiction extends to the top of the stream or bank, or to the outer edge of riparian vegetation, whichever is wider.

California Desert Native Plants Act (California Food and Agriculture Code §80001-80006)

The California Desert Native Plants Act (CDNPA) allows removal of certain non-listed desert plants under permits issued by the county agriculture commissioner or sheriff.

D.16.3 REGIONAL/LOCAL

Kern County General Plan (Adopted June 15, 2004)

The Land Use/Conservation/Open Space Element of the Kern County General Plan requires that individual projects minimize or mitigate site-specific impacts on wildlife and botanical resources through the CEQA process. The General Plan also provides policies that protect oak woodlands and large oak trees.

Local Native Tree Protection Ordinances

California State Senate Concurrent Resolution 17 and several city and county ordinances regulate effects on native oak and riparian trees and woodlands, as well as designated landmark or heritage trees. These local ordinances generally require permits for any activities that directly remove covered trees of specific size and species, or indirectly affect them by work under or adjacent to their canopy driplines. The ordinances typically have specific quantitative mitigation ratios for replacement of trees affected by projects.

The Los Angeles County Ordinance 153478 applies to all unincorporated areas of Los Angeles County. Under the county ordinance, a person shall not cut, destroy, remove, relocate, inflict damage, or encroach into the protected zone of oak trees of a certain size. The ordinance specifically prohibits the destruction of Valley oak (*Quercus lobata*) and California live oak (*Quercus agrifolia*) and any tree of the oak genus indigenous to California which measures eight inches or more in diameter four-and-one-half feet above the ground. It excludes scrub oaks (*Quercus berberidifolia*) and nursery grown oaks. The Department of Public Works, as the primary enforcement agency, has the authority to authorize relocation or removal under certain circumstances, such as public endangerment.

Los Angeles County General Plan

The Conservation, Open Space, Recreation, and Ecological Resources goals of the Los Angeles County General Plan aim to preserve and protect prime agricultural lands, forest, fisheries, significant ecological areas, and other biotic resources through preservation, mitigation, and enhancement actions.

Overview of Special Habitat Management Areas

The Proposed Action and Alternatives are located near or crosses through a variety of special habitat management areas managed by federal, State, county, and other agencies. The Regulatory section identifies regional and local plans, policies, and regulations applicable to the Proposed Action and Alternatives. The following are brief discussions of the special habitat management areas with the potential to be affected by the Proposed Action and Alternatives:

- Significant Ecological Areas

- USFWS-Designated Critical Habitat
- Riparian Conservation Areas
- California Desert Conservation Area
- Antelope Valley California Poppy Reserve
- Arthur B Riley Desert Woodland State Park
- San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy

Los Angeles County Significant Ecological Areas

Significant Ecological Areas (SEAs) are ecologically important or fragile land and water areas, valuable as plant and animal communities. These areas are classified as one or more of the following: 1) habitats for rare and endangered species of plants and animals; 2) restricted natural communities—ecological areas which are scarce on a regional basis; 3) habitat restricted in distribution in the county; 4) breeding or nesting grounds; 5) unusual biotic communities; 6) sites with critical wildlife habitat and fish value; and 7) relatively undisturbed habitat.

The Los Angeles County Zoning Ordinance currently contains a procedure for reviewing development proposals that are located within or partially within an SEA. The intent of this procedure is not to preclude development, but to allow limited, controlled development that does not jeopardize the remaining biotic resources of SEAs. The procedure exempts certain developments from the SEA provisions but subjects other developments to a high degree of review through the Conditional Use Permit (CUP) process, including review by the Significant Ecological Area Technical Advisory Committee (SETAC), who advises the County Planning Commission during proposed planning phases on the sensitivity of the proposed project to the protected biological resources within the SEAs, and to proposed modifications that could compromise the integrity of SEAs.

Under the existing SEA regulatory procedure, public utilities are exempt from SEA regulations; they do not require an “SEA Clearance” because they are not subject to a building or grading permit and would not come under the scrutiny of zoning review. Listed below are the SEAs that have been identified within the project area and descriptions of the specific considerations for each individual SEA. Although the BRRTP is exempt from SEA regulations, the following guidelines listed for each will be taken into consideration by the Project applicant prior to beginning the Project design.

SEA - Joshua Tree Woodlands

Retain Joshua tree woodland, a rare community, with adequate buffers so as to allow for the long term viability and integration of the plant community as a whole.

SEA - San Andreas Rift Zone

Retain connectivity and linkage values between large open space units such as between the San Gabriel Mountains and Tehachapi Mountains and between the Fairmont and Antelope Buttes and Portal Ridge.

SEA - San Francisquito Canyon

This SEA was established to preserve habitat associated with the unarmored stickleback fish, an endangered species. Originally at 1,330 acres, the SEA has been reduced to less than 1,220 acres and is characterized as ‘severally degraded.’ A 1,220 acre buffer originally mapped around this SEA has been virtually eliminated by new residential and commercial developments in the canyon (see Appendix A of the Biological Resources Technical Report).

USFWS-Designated Critical Habitat

USFWS-Designated Critical Habitat is a specific geographic area(s) that is essential for the conservation of a threatened or endangered species and that may require special management and protection. Critical

habitat may include an area that is not currently occupied by the species but that will be needed for its recovery. Critical habitat may be unoccupied for a number of reasons, including the extirpation of the species from this portion of the region. Critical habitat may be in areas unsuitable for the species, but may be restored to suitability with proper management. Some critical habitat may never be occupied by the species, but was designated or proposed because it is essential for conserving the species by maintaining factors constituting the species' habitat. USFWS-designated critical habitat has been identified within the Project area for the California red-legged frog (*Rana aurora draytonii*), California coastal gnatcatcher (*Polioptila californica californica*) and Arroyo toad (*Bufo californicus*).

Riparian Conservation Area

On USFS-managed lands, when designing new projects within the riparian areas, a Five-Step Project Screening Process for Riparian Conservation Areas, as described in Appendix E of the Forest Service Land Management Plan (2005), must be applied. RCAs combine the ecologic concerns of riparian ecosystems with the hydrologic concerns of floodplains and streamside slopes. The goal of establishing an RCA is to protect, maintain, or improve water quality, site productivity, channel stability, riparian vegetation, and riparian-dependent species and habitats (see Appendix N of the Biological Resources Technical Report). According to the Forest Plan all activities must either be neutral or beneficial to RCAs otherwise a Forest Plan Amendment must be approved. RCAs are delineated according to the following criteria:

- Within one mile of any known occurrence of threatened, endangered, proposed, candidate, and/or sensitive species;
- All 100-year recurrence interval floodplains;
- Within 328 feet (100 meters) of each edge of perennial streams and lakes or reservoirs;
- Within 98 feet (30 meters) of each edge of seasonally-flowing or intermittent streams.

The above criteria are flexible, and can be adjusted depending on site-specific information such as vegetation type, topography, species presence in adjacent drainages, or soil characteristics. Both aquatic and terrestrial ecosystems are considered when classifying RCAs because of the interaction of the two for species migration and travel. Suitable habitat may extend beyond the riparian zone where terrestrial ecosystems contribute to the overall functional habitat. (See Appendix N of the Biological Resources Technical Report.)

Antelope Valley California Poppy Reserve

The Antelope Valley California Poppy State Reserve is State-protected reserve land located in the rural west side of the Antelope Valley in northern Los Angeles County. The Antelope Valley is located in the western Mojave Desert at an elevation ranging from 2,600 to 3,000 feet, making it a high desert environment. The reserve is administered by the California State Parks. The area is one of the State's most consistent poppy-bearing lands. California State Parks does not water or use any other means to stimulate the flowers; the land is preserved to only influences by the natural forces that had once influenced all of our surroundings.

Arthur B. Ripley Desert Woodland State Park

Added to the State Parks in 1988, Ripley Desert Woodland is located a few miles west of the Poppy Reserve on Lancaster Road at 210th Street West. The park protects and preserves an impressive stand of native Joshua trees and junipers which once grew in great abundance throughout the valley.

Mountain Recreation and Conservation Authority Property

The San Gabriel and Lower Los Angeles River and Mountains Conservancy (RMC) were created by the California legislature in 1999. The mission of the RMC is to preserve open space and habitat in order to provide for low-impact recreation and education uses, wildlife habitat restoration and protection, and watershed improvements within their jurisdiction. The RMC is administered by the Santa Monica Mountains Conservancy.

D.17 EARTH RESOURCES

D.17.1 FEDERAL

Geology and Seismicity

The Institute of Electrical and Electronics Engineers (IEEE) 693 “Recommended Practices for Seismic Design of Substations” was developed by the Substations Committee of the IEEE Power Engineering Society, and approved by the American National Standards Institute and the IEEE-SA Standards Board.

This document provides seismic design recommendations for substations and equipment consisting of seismic criteria, qualification methods and levels, structural capacities, performance requirements for equipment operation, installation methods, and documentation. This recommended practice emphasizes the qualification of electrical equipment.

IEEE 693 is intended to establish standard methods of providing and validating the seismic withstand capability of electrical substation equipment. It provides detailed test and analysis methods for each type of major equipment or component found in electrical substations. This recommended practice is intended to assist the substation user or operator in providing substation equipment that will have a high probability of withstanding seismic events to predefined ground acceleration levels. It establishes standard methods of verifying seismic withstand capability, which gives the substation designer the ability to select equipment from various manufacturers, knowing that the seismic withstand rating of each manufacturer’s equipment is an equivalent measure. Although most damaging seismic activity occurs in limited areas, many additional areas could experience an earthquake with forces capable of causing great damage. This recommended practice should be used in all areas that may experience earthquakes.

Soils

Clean Water Act

Under the Clean Water Act, the National Pollutant Discharge Elimination System (NPDES) Stormwater program requires operators of construction sites one acre or larger (including smaller sites that are part of a larger common plan of development) to obtain authorization to discharge stormwater under an NPDES construction stormwater permit. The development and implementation of stormwater pollution prevention plans (SWPPPs) is the focus of NPDES stormwater permits for regulated construction activities.

Uniform Building Code

Published by the International Conference of Building Officials, the Uniform Building Code (UBC) provides complete regulations covering all major aspects of building design and construction, including soil stability, relating to fire and life safety and structural safety. This is the code adopted by most western states. The provisions of the 1997 UBC, Volume 1, contain the administrative, fire and life-safety and field inspection provisions, including all nonstructural provisions and those structural provisions necessary for field inspections. Volume 2 contains provisions for structural engineering design, including those design provisions formerly in the UBC Standards. Volume 3 contains the remaining material, testing and installation standards previously published in the UBC Standards.

Mineral Resources

It is the purpose of the regulations to set forth rules and procedures through which use of the surface of National Forest System lands in connection with operations authorized by the United States mining laws (30 U.S.C. 21–54), which confer a statutory right to enter upon the public lands to search for minerals, shall be conducted so as to minimize adverse environmental impacts on National Forest System surface resources.

Forest Service Manual (FSM) 2800 provides policy, management objectives, and regulations for Minerals and Geologic Resources. FSM 2800 consists of several chapters, each providing policy and regulation for a different aspect of mineral or geologic resource management, as follows: 2810 – Mining Claims; 2820 – Mineral Leases, Permits, and Licenses; 2830 – Mineral Reservations and Rights Outstanding; 2840 – Reclamation; 2850 – Mineral Materials; 2860 – Forest Service Authorized Prospecting and Minerals Collecting; and 2880 – Geologic Resources, Hazards, and Services.

Paleontology

Fossils are classified as non-renewable scientific resources and are protected by various laws, ordinances, regulations and standards (LORS) across the country. Professional standards for the assessment and mitigation of adverse impacts to paleontological resources have been established by the Society of Vertebrate Paleontology (SVP) (1995). Pertinent LORS are summarized and discussed below. This paleontological study was conducted in accordance with the LORS which are applicable to paleontological resources within the study area and the professional standards and guidelines established by the SVP.

American Antiquities Act of 1906 (16 USC 431-433).

This Act establishes a penalty for disturbing or excavating any historic or prehistoric ruin or monument or object of antiquity on federal lands as a maximum fine of \$500 or 90 days in jail.

National Historic Preservation Act (Pub. L. 89-665; 80 Stat. 915, 16 U.S.C. 470 et seq.).

NHPA provides for the survey, recovery, and preservation of significant paleontological data when such data may be destroyed or lost due to a federal, federally licensed, or federally funded project.

Federal Land Management and Policy Act of 1976 (43 U.S.C. 1712[c], 1732[b]); sec. 2, Federal Land Management and Policy Act of 1962 [30 U.S.C. 611]; Subpart 3631.0 et seq.), Federal Register Vol. 47, No. 159, 1982.

FLPMA defines significant fossils as: unique, rare or particularly well-preserved; an unusual assemblage of common fossils; being of high scientific interest; or providing important new data concerning [1] evolutionary trends, [2] development of biological communities, [3] interaction between or among organisms, [4] unusual or spectacular circumstances in the history of life, [5] or anatomical structure.

Paleontological Resources Preservation Act of March 2009: P.L. 111-011.

This Act is the first statute to preserve paleontological resources on USFS, BLM, and U.S. Department of the Interior, Bureau of Reclamation lands. This law essentially codifies collecting policies of federal land management agencies. It allows reasonable amounts of common invertebrate and plant fossils to be casually collected with negligible disturbance. In addition, it requires protection and preservation of uncommon invertebrate and plants and all vertebrate fossils, including imprints, molds, casts, etc.

Federal protection for scientifically significant paleontological resources applies to projects if any construction or other related project impacts occur on federally owned or managed lands, involve the crossing of state lines, or are federally funded.

D.17.2STATE

Geology and Seismicity

Alquist-Priolo Earthquake Fault Zoning Act

Primary State guidance relating to principal seismic hazards evaluated in this report is contained in the 1990 Seismic Hazards Mapping Act and 1994 Alquist-Priolo Earthquake Fault Zoning Act (originally enacted in 1972). The Seismic Hazards Mapping Act focuses on potential seismic hazards related to strong ground shaking, liquefaction, and seismically induced landslides. Under provisions in the act, the State is charged with designating and mapping areas at risk for these seismic hazards and the maps and associated reports are to be used by cities and counties in preparing their general plans and adopting land use policies to reduce and mitigate potential hazards to public safety. The California Geological Survey (CGS) has provided Seismic Hazard Zones maps for some quadrangles located in the southern part of the Project area, and these maps are incorporated into this study for evaluation of liquefaction hazard zones and earthquake-induced landslide hazard zones. Some quadrangles in the Project area have not yet been mapped by the State.

California Building Code

The California Building Code (CBC 2001) is based on the 1997 UBC, with the addition of more extensive structural seismic provisions. Chapter 16 of the CBC contains definitions of seismic sources and the procedure used to calculate seismic forces on structures.

Soils

In California, Stormwater NPDES permits on non-tribal and non-federal land are overseen by the Cal EPA. A SWPPP must include a site description, including a map that identifies sources of storm water discharges on the site, anticipated drainage patterns after major grading, areas where major structural and nonstructural measures will be employed, surface waters, including wetlands, and locations of discharge points to surface waters. The SWPPP also describes Best Management Practices (BMPs) that will be employed to control stormwater runoff and erosion and sedimentation, including protection of existing vegetation wherever possible and stabilization of disturbed areas.

Mineral Resources

State Surface Mining and Reclamation Action of 1975

Based on guidelines adopted by the California Geological Survey (CGS), areas known as Mineral Resource Zones (MRZs) are classified according to the presence or absence of significant deposits, as defined below (California Department of Conservation 2001). These classifications indicate the potential for a specific area to contain significant mineral resources.

- MRZ-1: Areas where the available geologic information indicates no significant mineral deposits or a minimal likelihood of significant mineral deposits.
- MRZ-2a: Areas where the available geologic information indicates that there are significant mineral deposits.
- MRZ-2b: Areas underlain by mineral deposits where geologic information indicates that significant inferred resources are present.

- MRZ-3a: Areas containing known mineral occurrences of undetermined mineral resource significance.
- MRZ-3b: Areas containing inferred mineral occurrences of undetermined mineral resource significance.
- MRZ-4: Areas of no known mineral occurrences where geologic information does not rule out the presence or absence of significant mineral resources.

Paleontology

State requirements for paleontological resource management are included in the Public Resources Code (Chapter 1.7), Section 5097.5 and 30244. These statutes prohibit the removal of any paleontological site or feature on public lands without permission of the jurisdictional agency, defines the removal of paleontological sites or features as a misdemeanor, and requires reasonable mitigation of adverse impacts to paleontological resources from developments on public (State) lands.

D.17.3 REGIONAL/LOCAL

Kern County General Plan

The Safety Element of the Kern County General Plan provides policies and measures to minimize injuries and loss of life and reduce property damage from seismic and geologic hazards. The main policy relevant to the Project is "The County shall encourage extra precautions be taken for the design of major lifeline installations, such as highways, utilities, and petrochemical pipelines." Proper design of the Project facilities, including all mitigation measures outlined in this document, would comply with this policy and would be consistent with the Safety Element.

The Land Use, Open Space, and Conservation Element of the Kern County General Plan provides the following policy related to preservation of paleontological resources: the County will promote the preservation of cultural and historic resources which provide ties with the past and constitute a heritage value to residents and visitors. Measures to minimize impacts in the plan include preservation of paleontologic resources in areas with known paleontologic resources, where feasible. The Project would be consistent with general plan policy for protection of paleontologic resources through implementation of the mitigation measures outlined in this document.

Los Angeles County General Plan

The Safety Element of the Los Angeles County General Plan provides goals and policies to reduce impacts from seismic and geologic hazards and provide a safer environment. The two main policies relevant to the Project are: minimize injury and loss of life, damage, and social, cultural, and economic impacts caused by earthquake hazards; and protect public safety and minimize the social and economic impacts from geologic hazards. Proper design of the Project facilities, including all mitigation measures outlined in this document, would meet these goals and would be consistent with the Safety Element.

The Conservation, Open Space, and Recreation Element of the Los Angeles County General Plan provides the following goal related to preservation of paleontologic resources: to preserve and protect sites of historical, archaeological, scenic, and scientific value. The Project would be consistent with general plan policy for protection of paleontologic resources through implementation of the mitigation measures outlined in this document.

Antelope Valley Areawide General Plan

The Antelope Valley Areawide General Plan includes policies related to seismic and geologic hazards. These policies generally include enforcing standards and criteria to reduce impacts from seismic and

geologic hazards, advocating detailed site evaluations and improved seismic design and construction standards for critical linear system facilities, and programs and practices for dealing with erosion, settlement, and other soil-related hazards.

D.18 WATER RESOURCES

D.18.1 FEDERAL

Clean Water Act-Section 404

Waters of the U.S. including wetlands are subject to U. S. Army Corps of Engineers (USACE) jurisdiction under Section 404 of the Clean Water Act (CWA). A Section 404 permit is required for the discharge of dredged or fill material into Waters of the U.S. The Los Angeles District of the USACE would provide review and permitting services for this Project.

Clean Water Act-Section 401

Pursuant to Section 401 of the CWA, a water quality certification is required from the California State Water Resources Control Board (SWRCB) for Section 404 permit activities in multiple regions. The SWRCB certifies that the discharge complies with State water quality standards and ensures that there is no net loss of wetlands through impact avoidance, minimization, and mitigation.

Clean Water Act-Section 303(d)

Section 303(d) requires that states make a list of waters that exceed the minimum level of pollutants put in place by the CWA. For waters on this list, the states must develop total maximum daily loads (TMDLs) which account for all sources, both point and non-point sources as defined by Section 502 of the CWA, of the pollutants that caused the water to be listed. In California, the SWRCB has interpreted State law (see Porter-Cologne Water Quality Control Act below) to require that implementation of TMDLs be addressed when incorporated into Basin Plans (water quality control plans).

D.18.2 STATE

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act defines “water quality objectives” as the allowable “limits or levels of water quality constituents or characteristics which are established for the reasonable protection of beneficial uses of water or the prevention of nuisance within a specific area.” Thus, water quality objectives are intended to protect the public health and welfare, and to maintain or enhance water quality in relation to the existing and/or potential beneficial uses of the water. Water quality objectives apply to both Waters of the United States and Waters of the State.

Regional Water Quality Control Board Basin Plans

The SWRCB requires individual Regional Water Quality Control Boards (RWQCBs) to develop Basin Plans that designate beneficial uses for surface waters and groundwater, set narrative and numerical objectives that must be attained or maintained to protect the designated beneficial uses and conform to the State’s antidegradation policy, and describe implementation programs to protect all waters in the Regions. In addition, Basin Plans incorporate by reference all applicable State and Regional Board plans and policies, and other pertinent water quality policies and regulations. The Basin Plans that apply to BRRTP are the Water Quality Control Plan for the Lahontan Region, and the Water Quality Control Plan, Los Angeles Region.

Construction Storm Water Program

The SWRCB and the nine RWQCBs implement water quality regulations under the federal CWA and California Porter Cologne Water Quality Control Act. Existing water quality regulations require compliance with the National Pollutant Discharge Elimination System (NPDES) for discharges of storm water runoff associated with a construction activity.

The Construction General Permit requires the development and implementation of a Storm Water Pollution Prevention Plan (SWPPP). The SWPPP must list Best Management Practices (BMPs) the discharger will use to protect storm water runoff and the placement of those BMPs. Additionally, the SWPPP must contain a visual monitoring program, a chemical monitoring program for “non-visible” pollutants to be implemented if there is a failure of BMPs, and a sediment monitoring plan if the site discharges directly to a water body listed on the 303(d) list for sediment.

Lake or Streambed Alteration Agreement

Section 1602 of the California Department of Fish and Game (CDFG) Code protects the natural flow, bed, channel, and bank of any river, stream, or lake designated by the CDFG, in which there is at any time an existing fish or wildlife resource, or from which these resources derive benefit.

D.18.3 REGIONAL/LOCAL

Kern County General Plan

The Kern County General Plan, Land Use, Open Space, and Conservation Element, addresses water resources in the following policies:

Policies: Physical and Environmental Constraints

Policy 8: Encourage the preservation of the floodplain’s flow conveyance capacity, especially in floodways, to be open space/passive recreation areas throughout the County.

Policy 9: Construction of structures that impede water flow in a primary floodplain will be discouraged.

Policy 10: The County will allow lands which are within flood hazard areas, other than primary floodplains, to be developed in accordance with the General Plan and Floodplain Management Ordinance, if mitigation measures are incorporated so as to ensure that the proposed development will not be hazardous within the requirements of the Safety Element of this General Plan.

Policy 11: Protect and maintain watershed integrity within Kern County.

Policies: Resource

Policy 11: Minimize the alteration of natural drainage areas. Require development plans to include necessary mitigation to stabilize runoff and silt deposition through utilization of grading and flood protection ordinances.

Policy 20: Areas along rivers and streams will be conserved where feasible to enhance drainage, flood control, recreational, and other beneficial uses while acknowledging existing land use patterns.

Los Angeles County Draft General Plan

The Los Angeles County General Plan, Conservation and Open Space Element, addresses water resources in the following policies:

Policy 4: Protect ground water recharge and watershed areas, conserve storm and reclaimed water, and promote water conservation programs.

Policy 5: Encourage the maintenance, management, and improvement of the quality of imported domestic water, ground water supplies, natural runoff and ocean water.

Policy 12: Protect watershed, streams, and riparian vegetation to minimize water pollution, soil erosion and sedimentation, maintain natural habitats, and aid in ground water recharge.

APPENDIX E: ELECTRIC AND MAGNETIC FIELDS MANAGEMENT PLAN

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May 2011

LOS ANGELES DEPARTMENT OF WATER AND POWER Barren Ridge Renewable Transmission Project

Electric and Magnetic Fields Management Plan

PROJECT NUMBER:

118927

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**LOS ANGELES DEPARTMENT OF WATER & POWER
BARREN RIDGE RENEWABLE TRANSMISSION PROJECT
ELECTRIC AND MAGNETIC FIELDS MANAGEMENT PLAN**

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1.0 INTRODUCTION

1.1 PROJECT DESCRIPTION

The City of Los Angeles Department of Water and Power (LADWP) is proposing to construct the Barren Ridge Renewable Transmission Project (BRRTP or Project) to access clean, renewable resources in the Tehachapi Mountains and Mojave Desert areas, and to improve reliability and upgrade transmission capacity. LADWP, the U.S. Department of Agriculture, Forest Service (USFS) and the U.S. Department of the Interior, Bureau of Land Management (BLM) are preparing a joint Environmental Impact Statement (EIS) / Environmental Impact Report (EIR) for the proposed BRRTP.

LADWP prepared an Alternatives Development Report (USFS/BLM/LADWP 2011) to document the development of alternatives and determine which alternatives would be considered for full analysis in the EIS/EIR. A range of alternatives were identified through a siting and routing evaluation, the scoping process, and supplemental studies and consultations. Each Lead Agency (USFS, BLM and LADWP) has its own purposes to consider in evaluating a proposed project/action and the alternatives to the proposed project/action. The National Environmental Policy Act (NEPA) (CFR Title 40 Section 1502.13) and the California Environmental Quality Act (CEQA) (Guidelines Section 15124(b)) explain that an agency's statement of objectives or purpose and need should describe the underlying purpose of the proposed project or need for action. Each agency's jurisdiction is unique, and the decision it is called upon to make is also unique; thus, each agency's statement of objectives or purpose and need is different. Based upon review of potential impact characterizations, significant and unavoidable adverse effects, agency and public comments, and a consideration of cumulative impacts of the alternative routes, the BLM, USFS, and LADWP identified Alternative 2, also LADWP's Proposed Action, as the agency preferred alternative. Therefore, this Field Management Plan is for the preferred 230 kV Alternative, Alternative 2.

The Proposed Action includes the following:

1. Construction of 62 miles of a new 230 kilovolt (kV) double-circuit transmission line from the LADWP Barren Ridge Switching Station to the proposed Haskell Canyon Switching Station.
2. Addition of 12 miles of a new 230 kV circuit on the existing double-circuit structures from Haskell Canyon to the Castaic Power Plant.
3. Reconductoring of 75 miles of the existing Barren Ridge – Rinaldi (BR-RIN) 230 kV transmission line with larger-capacity conductors between the Barren Ridge Switching Station and the Rinaldi Substation.
4. Construction of a new 500-foot by 600-foot switching station in Haskell Canyon.
5. Expansion of the existing Barren Ridge Switching Station located 12 miles north of Mojave, California.

The purpose of the Electric and Magnetic Fields (EMF) Management Plan is to provide LADWP with an assessment of EMF from the Proposed Action and to present no-cost and reasonable low-cost steps to minimize the magnetic field exposure from new or upgraded facilities in accordance with the California Public Utilities Commission Decision 93-11-013.

1.2 BASE COST OF PROPOSED ACTION

As part of Decision 93-11-013 (discussed more in detail in Section 2.0), the California Public Utilities Commission (CPUC) issued the requirement that 4% of the project cost can be used for EMF mitigation if the magnetic field reduction is at least 15% for the design options that are investigated.

The estimated cost of the Proposed Project is approximately \$233 Million. Four percent of this estimated base cost for EMF mitigation is \$9.32 Million.

2.0 BACKGROUND: CPUC DECISION 93-11-013 AND EMF POLICY

LADWP is a municipal utility and therefore is not regulated by the California Public Utilities Commission (CPUC). However, in regards to EMF analysis and policy, LADWP would follow CPUC direction as a general guideline to this subject matter.

On January 15, 1991, the CPUC initiated an investigation to consider its role in mitigating the health effects, if any, of electric and magnetic fields from utility facilities and power lines. A working group of interested parties, called the California EMF Consensus Group, was created by the CPUC to advise it on this issue. It consisted of 17 stakeholders representing citizens groups, consumer groups, environmental groups, state agencies, unions, and utilities. The Consensus Group's fact-finding process was open to the public, and its report incorporated concerns expressed by the public. Its recommendations were filed with the Commission in March 1992.

Based on the work of the Consensus Group, written testimony, and evidentiary hearings, the CPUC issued its decision (93-11-013) on November 2, 1993, to address public concern about possible EMF health effects from electric utility facilities.

In response to a situation of scientific uncertainty and public concern, the decision specifically requires utilities to consider "no-cost" and "low-cost" measures, where feasible, to reduce exposure from new or upgraded utility facilities. It directs that no-cost mitigation measures be undertaken, and that low-cost options, when they meet certain guidelines for field reduction and cost, be adopted through the project certification process. Four percent of total project budgeted cost is the benchmark in implementing EMF mitigation, and mitigation measures should achieve incremental magnetic field reductions of at least 15% of the optional mitigation designs being investigated.

3.0 ELECTRIC AND MAGNETIC FIELDS (EMF)

EMF is a term used to describe electric and magnetic fields that are created by electric voltage (electric field) and electric current (magnetic field). Power frequency EMF is a natural consequence of electrical circuits, and can be either directly measured using the appropriate measuring instruments or calculated using appropriate information.

Electric fields are present whenever voltage exists on a wire, and are not dependent on current. The magnitude of the electric field is primarily a function of the configuration and operating voltage of the line and decreases with the distance from the source (line). The electric field can be shielded (i.e., the strength can be reduced) by any conducting surface, such as trees, fences, walls, buildings, and most types of structures. The strength of an electric field is measured in volts per meter (V/m) or kilovolts per meter (kV/m).

Magnetic fields are present whenever current flows in a conductor, and are not dependent on the voltage of the conductor. The strength of these fields also decreases with distance from the source. However, unlike electric fields, most common materials have little shielding effect on magnetic fields.

The magnetic field strength is a function of both the current in the conductor and the design of the system. Magnetic fields are measured in units called Gauss. However, for the low levels normally encountered near electric utility facilities, the field strength is expressed in a much smaller unit, the milliGauss (mG), which is one thousandth of a Gauss.

Power frequency EMF are present wherever electricity is used. This includes not only utility transmission lines, distribution lines, and substations, but also the building wiring in homes, offices, and schools, and in the appliances and machinery used in these locations. Magnetic field intensities from these sources can range from below 1 mG to above 1,000 mG (1 Gauss).

Magnetic field strengths diminish with distance. Fields from compact sources (i.e., those containing coils, such as small appliances and transformers) drop off with distance ("r") from the source by a factor of $1/r^3$. For three-phase power lines with balanced currents, the magnetic field strength reduces at a rate of $1/r^2$. Fields from unbalanced currents, which flow in paths such as neutral or ground conductors, reduce at a rate inversely proportionate to the distance from the source, $1/r$. Conductor spacing and configuration also affect the rate at which the magnetic field strength decreases, as well as the presence of other sources of electricity. The magnetic field levels of power lines will vary with customer demand.

Magnetic field strengths for transmission lines in this Project would vary in a range of approximately 60 to 200 mG at the edge of rights-of-way.

4.0 PRIORITY AREAS

4.1 EMF TRANSMISSION LINE GUIDELINES

The mitigation of magnetic fields shall be applied to the transmission line according to the land use priority. The estimated percentage for each land use crossed by the Proposed Action (which includes the Haskell to Rinaldi, Segment K route) is identified as follows:

1. School or Daycare – 0.5%
2. Residential – 36%
3. Commercial/Industrial – 11%
4. Recreational – 13%
5. Agricultural, Rural – 16.5%
6. Undeveloped Land (Zoned for Residential) – 8%
7. Undeveloped Land (Zone for Commercial/Industrial) – 2%
8. Unpopulated, Forested, Government Owned Land – 13%

The assessment for the Field Management Plan is conducted for magnetic fields at the edge of the 230 kV new and reconductored transmission lines. Approximately one-third of the Proposed Action route is located in rural residential land use areas. Segment K comprises primarily residential, commercial, and industrial land use areas. There are no schools located at the California Department of Education's setback limit of 150 feet for 230 kV transmission lines.

5.0 TRANSMISSION LINE DATA AND PROJECT CASE DESCRIPTIONS

5.1 TRANSMISSION LINE DATA

The magnetic fields are calculated at one meter or three feet three inches above the ground laterally across of the right-of-way (ROW). The magnetic field strength depends upon the location along the line at which it is calculated. Because the height above the ground of the conductors would vary along the line, the magnetic field strength would also vary along the line. The maximum magnetic field is obtained at the minimum conductor clearance point, which is normally at midspan. The line load values shown for each line are balanced currents.

LADWP's EMF policy applies to new or upgraded facilities. There are three different structures (all vertical circuit configurations) that are new or being upgraded in the preferred route:

5.1.1 230 kV Double-Circuit Lattice Structure

Figure 1 is a representation of the 230 kV double-circuit transmission line structure proposed from Barren Ridge Switching Station to the new Haskell Canyon Switching Station. The proposed new 230 kV double-circuit line would share a majority of the corridor with the LADWP +/- 500 kV Pacific Direct Current Intertie (PDCI) transmission line and the LADWP BR-RIN 230 kV transmission line. The PDCI and BR-RIN 230 kV transmission lines interchange in terms of being adjacent to the BRRTP 230 kV transmission line. Table 4 indicates dimensions and data used in the magnetic field analysis. The maximum loading capacity for the BRRTP 230 kV transmission line would be 1,987 Amps for each circuit and the maximum loading for the Barren Ridge - Haskell 230 kV line would be 1,361 Amps.

5.1.2 230 kV Three-Circuit Lattice Structure

Figure 2 is a representation of the BRRTP 230 kV three-circuit structure transmission line that is proposed to be located in select areas along the Proposed Action. The LADWP +/- 500 kV PDCI transmission line is located adjacent to the 230 kV three-circuit structure line in this section of the corridor. Table 5 indicates dimensions and data used in the magnetic field analysis. The maximum loading for the new 230 kV line would be 1,987 Amps and the maximum loading for the Barren Ridge - Haskell 230 kV line would be 1,587 Amps.

5.1.3 230 kV Four-Circuit Lattice Structure

Figure 3 is a representation of the BRRTP 230 kV four-circuit structure transmission line that is located on the reconductoring portion of the Proposed Action. The LADWP +/- 500 kV PDCI transmission line and an LADWP 115 kV double-circuit transmission line are located adjacent to the 230 kV four-circuit structures in this corridor. Table 6 indicates dimensions and data used in the magnetic field analysis. The maximum loading for the Haskell – Rinaldi 230 kV line would be 1,627 Amps. In terms of the other three circuits, the maximum loading is as follows:

- | | |
|--------------------------------|------------|
| • Haskell – Sylmar 230 kV Line | 1,810 Amps |
| • Haskell – Olive 230 kV Line | 1,251 Amps |
| • Castaic – RS J 230 kV Line | 1,127 Amps |

6.0 FIELD REDUCTION MITIGATION MEASURES

There are a number of mitigation schemes that can be used to reduce EMF. The primary mitigation schemes are:

1. Increasing height of the structures to move the conductors farther from ground.
2. Locate the power lines closer to the center of the corridor.
3. Reduce the phase conductor spacing.
4. Optimize the phasing of the new transmission lines.
5. Changing the phasing of existing transmission lines.

Optimizing conductor phasing and increasing conductor height are the most viable mitigation options to reduce the ground level magnetic fields produced by these 230 kV transmission lines. Compacting (reducing) the phase spacing was not considered, as these would be multiple-circuit, lattice structure designs. Locating the transmission lines closer to the centerline was not assessed, as there are existing lines in the ROW. The base case and mitigation options are discussed below.

6.1 BASE CASE

The base case calculated magnetic fields for the three structures of the Proposed Project are shown in Table 1. This includes the addition of the new circuit for the existing double-circuit line in the corridor from Castaic to Haskell and the corridor in the Proposed Action that has a Southern California Edison (SCE) 230 kV line. The calculated magnetic fields are shown for edge of ROW locations: 1) Towards the outside of the corridor from the 230 kV transmission line; and 2) Toward existing transmission lines. For the double-circuit structure, two cases are presented: one case for the BRRTP transmission line adjacent to the PDCI transmission line, and the other case for the BRRTP transmission line adjacent to the BR-RIN 230 kV transmission line. The base case phasing is C-B-A top to bottom (of the vertical configured circuit) for both adjacent circuits.

TABLE 1. BASE CASE MAGNETIC FIELDS

Case	Magnetic Field at Edge of ROW Towards Outside Corridor (mG)	Magnetic Field at Edge of ROW Toward Existing Lines (mG)
Double-Circuit Structure Adjacent to PDCI Transmission Line (Edge of ROW Away From 230 kV line=115 Feet, Edge of ROW Toward Existing Lines=85 Feet)	59	75
Double-Circuit Structure Adjacent to LADWP BR-RIN 230 kV Transmission Line (Edge of ROW Away From 230 kV line=115 Feet, Edge of ROW Toward Existing Lines=75 Feet)	41	191
Two Double-Circuit Structures with Addition of New Circuit	81	244
Double-Circuit Structure Adjacent to SCE 230 kV Transmission Line, BR-RIN 230 kV Transmission Line and PDCI Transmission Line	81	127
Three-Circuit Structure (Edge of ROW=100 Feet Both Sides of the Line)	108	121
Four-Circuit Structure (Edge of ROW=100 Feet Both Sides of the Line)	120	62

6.2 CONDUCTOR PHASING

The most significant reduction of magnetic fields would be from optimizing of the phasing of the circuits for the transmission line. The conductor phasing assessment of the three structures involved only the two adjacent circuits of the line towards the outer edge of the ROW (applies to the three- and four-circuit structures). The largest reduction of magnetic fields would be from a "cross phase" configuration in which the phasing of the top and bottom phases are opposed for two adjacent circuits (A-B-C top-to-bottom on one side and C-B-A top-to-bottom on the other side). One other phasing configuration was investigated for the two adjacent circuits: C-B-A top-to-bottom on one side and B-A-C top-to-bottom on the other side. Table 2 depicts the conductor phasing mitigation results for the three structures.

6.3 INCREASE IN CONDUCTOR HEIGHT

For each structure, the conductor heights were increased for three different distances: 10 feet, 20 feet, and 30 feet above ground. These conductor height increases would result in higher minimum conductor heights which will require increases in the structure heights or structure heights in the upper range of the heights for the design. Table 3 depicts the increased conductor height mitigation results for the three structures. These case studies assume the base case phase orientation (C-B-A top-to-bottom for both circuits).

TABLE 2. OPTIMIZE PHASING MITIGATION

Case	Magnetic Field at Edge of ROW Away from 230 kV Line (mG)		Magnetic Field at Edge of ROW Toward Existing Lines (mG)	
	Calculated (mG)	Change in Magnetic Field from Base Case at the Edge of ROW (%)	Calculated (mG)	Change in Magnetic Field from Base Case at the Edge of ROW (%)
230 kV Double-Circuit Structure Line				
Adjacent to PDCI Transmission Line				
C-B-A A-B-C Top to Bottom	24	59% Reduction	161	115% Increase
C-B-A B-A-C Top to Bottom	36	39% Reduction	129	72% Increase
Adjacent to BR-RIN Transmission Line				
C-B-A A-B-C Top to Bottom	19	54% Reduction	106	45% Reduction
C-B-A B-A-C Top to Bottom	22	46% Reduction	136	29% Reduction
Two Double-Circuit Lines – New Circuit				
C-B-A A-B-C Top to Bottom	35	57% Reduction	208	15% Reduction
C-B-A B-A-C Top to Bottom	51	37% Reduction	221	9% Reduction
Double-Circuit Line – SCE Line – BR-RIN Line – PDCI Line				
C-B-A A-B-C Top to Bottom	23	72% Reduction	40	51% Reduction
C-B-A B-A-C Top to Bottom	48	41% Reduction	52	36% Reduction
230 kV Three-Circuit Structure Line				
C-B-A A-B-C Top to Bottom	42	61% Reduction	169	40% Increase
C-B-A B-A-C Top to Bottom	67	38% Reduction	146	21% Increase
230 kV Four-Circuit Structure Line				
C-B-A A-B-C Top to Bottom	42	65% Reduction	41	34% Reduction
C-B-A B-A-C Top to Bottom	72	33% Reduction	41	34% Reduction

TABLE 3. INCREASE CONDUCTOR HEIGHT MITIGATION

Case	Magnetic Field at Edge of ROW Away from 230 kV Line (mG)		Magnetic Field at Edge of ROW Toward Existing Lines (mG)	
	Calculated (mG)	Change in Magnetic Field at the Edge of ROW (%)	Calculated (mG)	Change in Magnetic Field at the Edge of ROW (%)
230 kV Double-Circuit Structure Line				
Adjacent to PDCI Transmission Line				
Increase Structure Height by Ten Feet	57	3% Reduction	84	12% Increase
Increase Structure Height by Twenty Feet	55	7% Reduction	96	28% Increase
Increase Structure Height by Thirty Feet	52	12% Reduction	106	41% Increase
Adjacent to BR-RIN Transmission Line				
Increase Structure Height by Ten Feet	37	10% Reduction	170	11% Reduction
Increase Structure Height by Twenty Feet	34	17% Reduction	151	21% Reduction
Increase Structure Height by Thirty Feet	27	12% Reduction	135	29% Reduction
Two Double-Circuit Lines – New Circuit				
Increase Structure Height by Ten Feet	79	2% Reduction	250	2% Increase
Increase Structure Height by Twenty Feet	69	15% Reduction	252	3% Increase
Increase Structure Height by Thirty Feet	63	22% Reduction	253	4% Increase
Double-Circuit Line – SCE Line – BR-RIN Line – PDCI Line				
Increase Structure Height by Ten Feet	67	17% Reduction	107	16% Reduction
Increase Structure Height by Twenty Feet	68	16% Reduction	109	14% Reduction
Increase Structure Height by Thirty Feet	61	25% Reduction	100	21% Reduction
230 kV Three-Circuit Structure Line				
Increase Structure Height by Ten Feet	101	6% Reduction	132	9% Increase
Increase Structure Height by Twenty Feet	93	14% Reduction	144	19% Increase
Increase Structure Height by Thirty Feet	86	20% Reduction	154	27% Increase
230 kV Four-Circuit Structure Line				
Increase Structure Height by Ten Feet	110	8% Reduction	63	2% Increase
Increase Structure Height by Twenty Feet	100	17% Reduction	65	5% Increase
Increase Structure Height by Thirty Feet	91	24% Reduction	68	10% Increase

7.0 CONCLUSION: MITIGATION RESULTS

The conclusions for the Field Management Plan assessment are described below.

7.1 OPTIMUM PHASING – NO COST

The “no cost” option is the optimum phasing mitigation technique, which would also result in the largest reduction in magnetic fields for all three structure type transmission lines. This would be “no cost” because the optimum phasing scheme alternatives can be implemented as part of the construction of the new transmission line without any design or operation changes.

The range of reduction of magnetic fields for the phasing mitigation schemes would be 33% to 65%, which meets the requirement of a 15% or more reduction in magnetic fields. The largest reduction in magnetic fields would apply to the areas towards the outside of the 230 kV transmission line ROW away from the existing transmission lines. In particular, the sections of the corridor with the 230 kV transmission line adjacent to the LADWP +/- 500 kV PDCI transmission line would cause an increase in the magnetic fields because of the interaction of the AC and DC magnetic field flux densities. In sections of the corridor where the new BRRTP transmission lines would be adjacent to the existing BR-RIN 230 kV transmission line, there would also be a reduction of magnetic fields within the BRRTP 230 kV transmission line ROW.

In terms of the priority areas, there are several residential and recreation areas in the corridor in which there could be a reduction of magnetic fields if this technique is applied.

7.2 INCREASED CONDUCTOR HEIGHT – LOW COST

Increasing of the conductor height for a range of viable height increases would not meet the EMF Policy guideline of a 15% reduction or more for the new 230 kV double-circuit transmission line sections in the areas outside of the 230 kV transmission line ROW. The exception would be the sections of new 230 kV transmission line adjacent to the existing BR-RIN 230 kV transmission line where structure height increases of 20 feet or more would result in more than a 15% reduction in magnetic fields. Conductor height increases of 20 feet or more for the three- and four-circuit structure transmission line sections would meet the 15% magnetic field reduction EMF Policy. This would apply in areas outside of the 230 kV transmission lines away from the existing transmission lines.

The cost of this mitigation alternative would have to be investigated on a case-by-case basis. In particular, there are residential and commercial/industrial areas adjacent to the three- and four-circuit structures in which there would be a significant reduction of magnetic fields. According to the 4% of the base cost guideline, approximately \$9 million could be used to increase structure heights and maintain transmission line tensions to increase the minimum conductor height to a minimum of 50 feet or more in certain spans.

TABLE 4. BRRTP DOUBLE-CIRCUIT TRANSMISSION LINE DATA

Data Description	Design Value
Phase Spacing	17 Feet
Distance from Phase Conductor to Center Line	15.75 Feet
Distance from Top Phase to Shield Wire	15.83 Feet
Minimum Conductor Height	30 Feet
Average Structure Height	162 Feet
Phase Conductor (New BRRTP 230 kV Line)	2156 kcmil ACSS/AW
Shield Wire	7/16" EHS Galvanized Steel
Maximum Operating Voltage	242 kV
Load Current	
BRRTP 230 kV Line	1,987 Amps
BR-Haskell 230 kV Line	1,587 Amps

FIGURE 2. BR RTP 230 kV THREE-CIRCUIT STRUCTURE

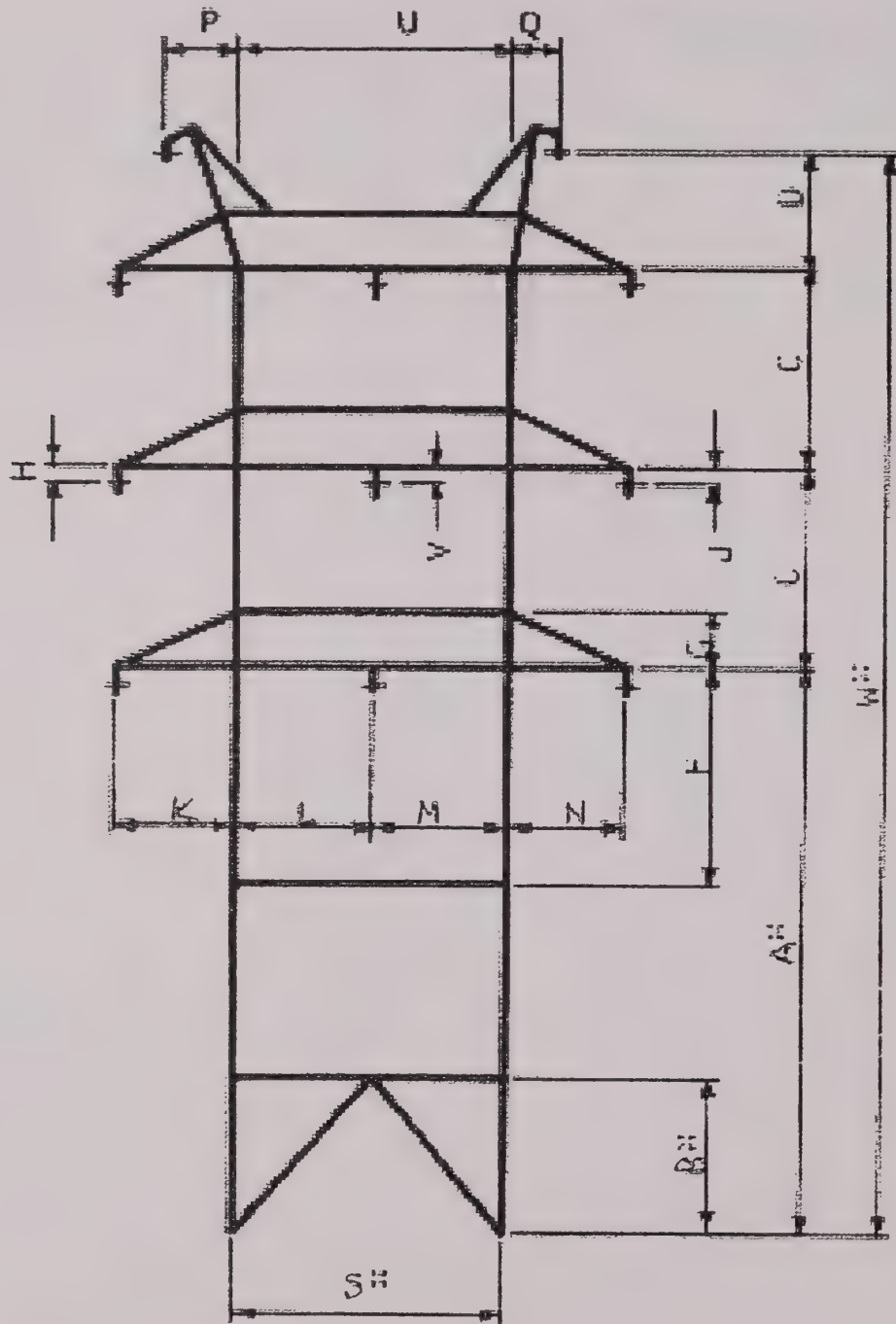


TABLE 5. BRRTP THREE-CIRCUIT TRANSMISSION LINE DATA

Data Description	Design Value
Phase Spacing	18 Feet
Distance Between Each Circuit	21 Feet
Distance from Top Phase to Shield Wire	11 Feet
Minimum Conductor Height	30 Feet
Average Structure Height	165 Feet
Phase Conductor (New BRRTP Line)	2156 kcmil ACSS/AW
Phase Conductor (Reconductor Barren Ridge-Rinaldi Line)	Two Cond Bundle 1433.6 kcmil ACSS/TW/HS
Shield Wire	7/16" EHS Galvanized Steel
Maximum Operating Voltage	242 kV
Load Current	
BRRTP 230 kV Line	1,987 Amps
BR-Haskell 230 kV Line	1,587 Amps

FIGURE 3. BRRTP FOUR-CIRCUIT TRANSMISSION LINE

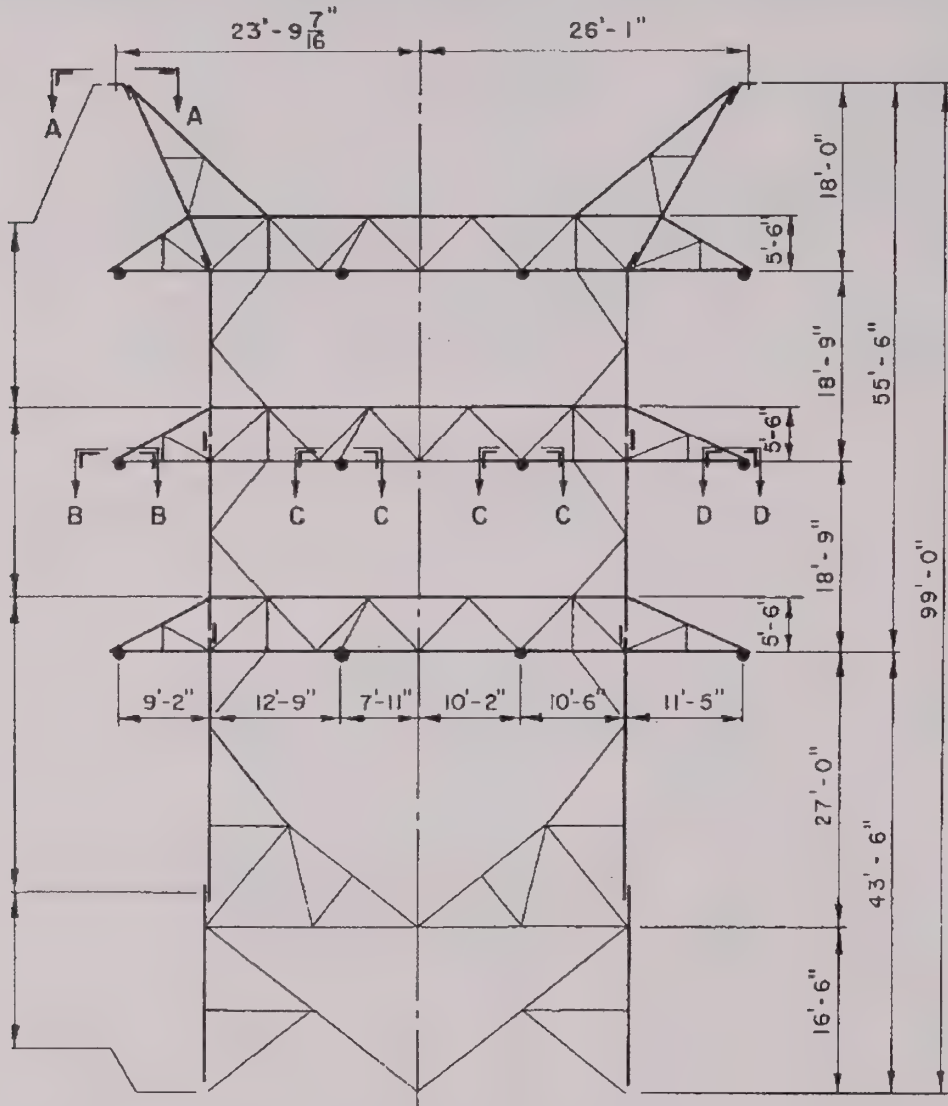


TABLE 6. BRRTP FOUR-CIRCUIT TRANSMISSION LINE DATA

Data Description	Design Value
Phase Spacing	21 Feet
Distance Between Outer and Inner Two Circuits	21 Feet
Distance Between Inner Two Circuits	18 Feet
Distance from Top Phase to Shield Wire	17 Feet
Minimum Conductor Height	30 Feet
Average Structure Height	145 Feet
Phase Conductor (Haskell-RIN Line)	Two Conductor Bundle 1433.6 kcmil ACSS/TW/HS
Phase Conductor (Other Three 230 kV Circuits)	2156 kcmil ACSS/AW
Shield Wire	7/16" EHS Galvanized Steel
Maximum Operating Voltage	242 kV
Load Current	
Haskell – Rinaldi 230 kV Line	1,627 Amps
Haskell – Sylmar 230 kV Line	1,810 Amps
Haskell – Olive 230 kV Line	1,251 Amps
Castaic – RS J 230 kV Line	1,127 Amps

APPENDIX F: DATA TABLES

LAND USE DATA TABLES (INCLUDES LAND USE, AGRICULTURE, RECREATION, PUBLIC SERVICES AND UTILITIES)

TABLE F-1. GENERAL AND AREA PLAN LAND USE DESIGNATION DEFINITIONS

Kern County	Los Angeles County	City of Lancaster	City of Palmdale
<ul style="list-style-type: none"> • EAg - Extensive Agriculture (Min. 20 Acre Parcel Size) • GCom - General Commercial • Gb - Greenbelt • IAg - Intensive Agriculture (Min. 20 Acre Parcel Size) • LDR - Low Density Residential • Max1 - Maximum 1 Unit/Net Acre • Max1CPA - Maximum 1 Unit/Net Acre/Comprehensive Plan Area • Max10 - Maximum 10 Units/Net Acre • Max10CPA - Maximum 10 Units/Net Acre/Comprehensive Plan Area • Max16 - Maximum 16 Units/Net Acre • Max29 - Maximum 29 Units/Net Acre • Max4 - Maximum 4 Units/Net Acre • MP - Mineral and Petroleum (Min. 5 Acre Parcel Size) • Min10 - Mineral 10 Gross Acres/Unit • Min2.5 - Mineral 2.5 Gross Acres/Unit • Min20 - Minimum 20 Gross Acres/Unit • Min5 - Minimum 5 Gross Acres/Unit • OF - Other Facilities • Rag - Resource Agriculture (Min. 20 Acre Parcel Size) • RM - Resource Management (Min. 20 Acre Parcel Size) • SPR - Specific Plan Required 	<p><i>Antelope Valley Area Plan</i></p> <ul style="list-style-type: none"> • N1 - Non-Urban 1 (0.5 du/ac) • N2 - Non-Urban 2 (1.0 du/ac) • O - Open Space • O-NF - National Forest • O-W - Water Body <p><i>Santa Clarita Area Plan</i></p> <ul style="list-style-type: none"> • BP - Business Park • CC - Community Commercial • CN - Commercial Neighborhood • IC - Industrial Commercial • OS - Open Space • OS(MOCA) - Open Space • RE(MOCA) - Residential Estate • RL - Residential Low • RL(MOCA) - Residential Low • RM - Residential Moderate • RMH - Residential Medium High • RS - Residential Suburban • RVL - Residential Very Low • RVL(MOCA) - Residential Very Low • C - Commercial • HM - Hillside Management • N1 - Non Urban 1 (0.5 du/ac) • N2 - Non-Urban 2 (0.5 to 1.0 du/ac) • O - Open Space • O/BLM - Open Space (Bureau of Land Management) • O-NF - National Forest • O-P - Open Space Parks • P - Public Service Facilities • SP - Specific Plan • TC - Transportation Corridor • U1 - Urban 1 (1.1 to 3.3 du/ac) • U2 - Urban 2 (3.4 to 6.6 du/ac) • U3 - Urban 3 (6.7 to 15.0 du/ac) • W - Floodway/Floodplain 	<ul style="list-style-type: none"> • NU - Non-Urban Residential (.4-2.0 DU/AC) • UR - Urban Residential (2.1 - 6.5 DU/AC) 	<ul style="list-style-type: none"> • Aqueduct - California Aqueduct • MRE - Mineral Resource Extraction • PF - Public Facility • SP-Ritter Ranch - Ritter Ranch Specific Plan • SP-City Ranch - City Ranch Specific Plan • LDR - Low Density Residential • SFR-2 - Single Family Residential 2 • NU - Non-Urban Residential (.4-2.0 DU/AC) • UR - Urban Residential (2.1 - 6.5 DU/AC)

TABLE F-2. LAND USE PLAN DESIGNATIONS CROSSED BY ALTERNATIVE 1

Alternative	From Mile	To Mile	Land Jurisdiction within Centerline	Applicable Land Use Plan	Land Use Plan Designation within Impact Corridor	Comments
1	0.0	0.9	Kern County	Kern County GP	RM	
1	0.9	2.2	BLM	CDCA, WEMO	MUC Limited	
1	2.2	2.6	Kern County	Kern County GP	RM	
1	2.6	3.5	BLM	CDCA, WEMO	MUC Limited	
1	3.5	4.0	Kern County	Kern County GP	RM	
1	4.0	4.7	BLM	CDCA, WEMO	MUC Limited	
1	4.7	5.4	Kern County	Kern County GP	RM	
1	5.4	6.0	BLM	CDCA, WEMO	MUC Limited	
1	6.0	7.0	Kern County	Kern County GP	Eag	
1	7.0	7.2	BLM	CDCA, WEMO	MUC Limited	
1	7.2	10.3	Kern County	Kern County GP	EAg	
1	10.3	10.5	Kern County	Kern County GP	EAg, RM	
1	10.5	11.3	Kern County	Kern County GP	OF, RM	
1	11.3	11.9	Kern County	Kern County GP	RM	
1	11.9	13.6	Kern County	Kern County GP	OF, RM	
1	13.6	13.7	Kern County	Kern County GP	RAg, RM	
1	13.7	13.8	Kern County	Kern County GP	EAg, RAg, RM	
1	13.8	14.1	Kern County	Kern County GP	RAg, RM	
1	14.1	14.2	Kern County	Kern County GP	MP, RAg, RM	
1	14.2	14.3	Kern County	Kern County GP	MP, RM	
1	14.3	14.6	Kern County	Kern County GP	Max4, MP, RM	
1	14.6	14.9	Kern County	Kern County GP	MP, RM	
1	14.9	15.0	Kern County	Kern County GP	RM	
1	15.0	15.2	Kern County	Kern County GP	EAg, RM	
1	15.2	18.0	Kern County	Kern County GP	EAg	
1	18.0	18.6	Kern County	Kern County GP	EAg, RM	
1	18.6	21.3	Kern County	Kern County GP	RM	
1	21.3	21.6	Kern County	Kern County GP	EAg, RM	
1	21.6	26.9	Kern County	Kern County GP	EAg	
1	26.9	27.2	Kern County	Kern County GP	EAg, RM	
1	27.2	27.3	Kern County	Kern County GP	EAg	
1	27.3	27.6	Kern County	Kern County GP	EAg, RM	
1	27.6	27.8	Kern County	Kern County GP	RM	
1	27.8	28.3	Kern County	Kern County GP	EAg, RM	
1	28.3	29.3	Kern County	Kern County GP	EAg	
1	29.3	29.4	Kern County	Kern County GP	EAg, RM	
1	29.4	30.9	Kern County	Kern County GP	RM	
1	30.9	31.1	Kern County	Kern County GP	EAg, RM	
1	31.1	31.6	Kern County	Kern County GP	RM	
1	31.6	31.9	Kern County	Kern County GP	EAg, RM	
1	31.9	32.0	Kern County	Kern County GP	RM	
1	32.0	34.1	Kern County	Kern County GP	Min20, RM	
1	34.1	34.3	Kern County	Kern County GP	Min10, Min20, RM	
1	34.3	34.8	Kern County	Kern County GP	Min10, RM	
1	34.8	35.0	Kern County	Kern County GP	Min10, OF, RM	
1	35.0	36.4	Kern County	Kern County GP	Min10, RM	
1	36.4	39.5	Kern County	Kern County GP	RM	
1	39.5	40.5	Kern County	Kern County GP	RM, SPR	
1	40.5	45.5	Kern County	Kern County GP	SPR	

Alternative	From Mile	To Mile	Land Jurisdiction within Centerline	Applicable Land Use Plan	Land Use Plan Designation within Impact Corridor	Comments
1	45.5	47.5	Los Angeles County	Antelope Valley AP	N1	
1	47.5	48.7	Los Angeles County	Antelope Valley AP	N1, O, O-W	
1	48.7	48.8	Los Angeles County	Antelope Valley AP	N1, O, O-W	Vacant Neenach Elementary School
1	48.8	48.9	Los Angeles County	Antelope Valley AP	N1, O	Vacant Neenach Elementary School
1	48.9	57.8	Los Angeles County	Antelope Valley AP	N1	
1	57.8	58.3	California Department of Fish and Game		Property Undesignated	
1	58.3	58.6	USFS	ANFLMP	BC	
1	58.6	58.8	California Department of Fish and Game		Property Undesignated	
1	58.8	65.4	USFS	ANFLMP	DAI	
1	65.4	69.8	USFS	ANFLMP	DAI	Wild Bunch Mining Claim
1	69.8	70.7	Los Angeles County	Santa Clarita Valley AP	O-NF	Wild Bunch Mining Claim
1	70.7	70.9	USFS	ANFLMP	DAI	Wild Bunch Mining Claim
1	70.9	71.1	Los Angeles County	Santa Clarita Valley AP	O-NF	Wild Bunch Mining Claim
1	71.1	72.3	USFS	ANFLMP	DAI	Wild Bunch Mining Claim
1	72.3	72.4	USFS	ANFLMP	DAI	
1	72.4	73.3	Los Angeles County	Santa Clarita Valley AP	HM	
1	73.3	73.4	Los Angeles County	Santa Clarita Valley AP	HM,SP	
1	73.4	73.5	Los Angeles County	Santa Clarita Valley AP	HM	
1	73.5	73.9	Los Angeles County	Santa Clarita Valley AP	HM,SP	
1	73.9	74.6	Los Angeles County	Santa Clarita Valley AP	SP	
1	74.6	75.3	Los Angeles County	Santa Clarita Valley AP	P, SP	
1	75.3	75.8	Los Angeles County	Santa Clarita Valley AP	O, P, SP	
1	75.8	78.1	State of California	NA		
1	78.1	78.2	USFS	ANFLMP	BCMUR	
1	78.2	78.4	USFS	ANFLMP	BCMUR, BCNM	
1	78.4	80.3	USFS	ANFLMP	BCNM	
1	80.3	80.9	Los Angeles County	Santa Clarita Valley AP	HM	
1	80.9	81.1	Los Angeles County	Santa Clarita Valley AP	HM, N1	
1	81.1	81.3	Los Angeles County	Santa Clarita Valley AP	N1,W	
1	81.3	81.4	Los Angeles County	Santa Clarita Valley AP	N1	
1	81.4	81.7	USFS	ANFLMP	DAI	
1	81.7	83.0	USFS	ANFLMP	BC	
1	83.0	83.2	USFS	ANFLMP	BC	Movie Ranch parcel

TABLE F-3. LAND USE PLAN DESIGNATIONS CROSSED BY ALTERNATIVE 2.

Alternative	From Mile	To Mile	Land Jurisdiction within Centerline	Applicable Land Use Plan	Land Use Plan Designation within Impact Corridor
2	0.0	0.9	Kern County	Kern County GP	RM
2	0.9	2.2	BLM	CDCA, WEMO	MUC Limited
2	2.2	2.6	Kern County	Kern County GP	RM
2	2.6	3.5	BLM	CDCA, WEMO	MUC Limited
2	3.5	4.0	Kern County	Kern County GP	RM
2	4.0	4.7	BLM	CDCA, WEMO	MUC Limited
2	4.7	5.4	Kern County	Kern County GP	RM
2	5.4	6.0	BLM	CDCA, WEMO	MUC Limited
2	6.0	7.0	Kern County	Kern County GP	Eag
2	7.0	7.2	BLM	CDCA, WEMO	MUC Limited
2	7.2	10.3	Kern County	Kern County GP	EAg
2	10.3	10.5	Kern County	Kern County GP	EAg, RM
2	10.5	11.3	Kern County	Kern County GP	OF, RM
2	11.3	11.9	Kern County	Kern County GP	RM
2	11.9	13.5	Kern County	Kern County GP	OF, RM
2	13.5	13.7	Kern County	Kern County GP	OF, RAg, RM
2	13.7	13.9	Kern County	Kern County GP	MP, OF, RAg
2	13.9	14.1	Kern County	Kern County GP	MP, OF
2	14.1	14.2	Kern County	Kern County GP	Max4, MP, OF
2	14.2	15.1	Kern County	Kern County GP	Max4, OF
2	15.1	15.2	Kern County	Kern County GP	Max4, Min2.5, OF
2	15.2	15.6	Kern County	Kern County GP	Min2.5, OF
2	15.6	15.7	Kern County	Kern County GP	Max4, Min2.5, OF
2	15.7	15.9	Kern County	Kern County GP	Max4, OF
2	15.9	16.0	Kern County	Kern County GP	Max29, Max4, OF
2	16.0	16.1	Kern County	Kern County GP	Max16, Max29, Max4, OF
2	16.1	16.2	Kern County	Kern County GP	Max16, Max4, OF
2	16.2	16.7	Kern County	Kern County GP	Max4, OF
2	16.7	16.8	Kern County	Kern County GP	EAg, Max4, Min2.5, OF
2	16.8	17.0	Kern County	Kern County GP	EAg, Min2.5, OF
2	17.0	17.2	Kern County	Kern County GP	EAg, Min2.5
2	17.2	17.7	Kern County	Kern County GP	EAg
2	17.7	17.8	Kern County	Kern County GP	EAg, Gb, LDR
2	17.8	21.0	Kern County	Kern County GP	Gb, LDR
2	21.0	21.1	Kern County	Kern County GP	EAg, Gb, LDR
2	21.1	21.2	Kern County	Kern County GP	EAg, Gb
2	21.2	22.2	Kern County	Kern County GP	EAg

Alternative	From Mile	To Mile	Land Jurisdiction within Centerline	Applicable Land Use Plan	Land Use Plan Designation within Impact Corridor
2	22.2	23.1	Kern County	Kern County GP	EAg, SPR
2	23.1	23.3	Kern County	Kern County GP	SPR
2	23.3	23.4	Kern County	Kern County GP	EAg, SPR
2	23.4	23.6	Kern County	Kern County GP	EAg
2	23.6	24.0	Kern County	Kern County GP	EAg, RM
2	24.0	26.2	Kern County	Kern County GP	EAg
2	26.2	26.3	Kern County	Kern County GP	EAg, IAg
2	26.3	26.4	Kern County	Kern County GP	EAg
2	26.4	26.7	Kern County	Kern County GP	EAg, IAg
2	26.7	26.8	Kern County	Kern County GP	IAg, Min2.5
2	26.8	26.9	Kern County	Kern County GP	IAg, Min2.5, OF
2	26.9	27.4	Kern County	Kern County GP	Min2.5, OF
2	27.4	27.6	Kern County	Kern County GP	GCom, Min2.5, OF
2	27.6	27.7	Kern County	Kern County GP	GCom, Max1, OF
2	27.7	27.9	Kern County	Kern County GP	Max1, OF
2	27.9	28.0	Kern County	Kern County GP	Max1, Min2.5, OF
2	28.0	29.0	Kern County	Kern County GP	Min2.5, OF
2	29.0	29.2	Kern County	Kern County GP	Max10CPA, Min2.5, OF
2	29.2	29.3	Kern County	Kern County GP	Max10CPA, OF
2	29.3	29.4	Kern County	Kern County GP	Max10CPA, Min2.5, OF
2	29.4	29.5	Kern County	Kern County GP	Min2.5, OF
2	29.5	29.7	Kern County	Kern County GP	GCom, Min2.5, OF
2	29.7	30.2	Kern County	Kern County GP	GCom, OF
2	30.2	30.3	Kern County	Kern County GP	GCom, Min2.5, OF
2	30.3	30.5	Kern County	Kern County GP	Min2.5, OF
2	30.5	30.9	Kern County	Kern County GP	Max10, Min2.5, OF
2	30.9	31.3	Kern County	Kern County GP	Min2.5, OF
2	31.3	31.5	Kern County	Kern County GP	IAg, Min2.5, OF
2	31.5	31.7	Kern County	Kern County GP	IAg, OF, RM
2	31.7	32.4	Kern County	Kern County GP	OF, RM
2	32.4	32.6	Kern County	Kern County GP	Max10CPA, OF, RM
2	32.6	33.0	Kern County	Kern County GP	Max10CPA, OF
2	33.0	33.2	Kern County	Kern County GP	Max1CPA, Max10CPA, OF
2	33.2	33.6	Kern County	Kern County GP	Max1CPA, OF
2	33.6	43.6	Los Angeles County	Antelope Valley AP	N1
2	43.6	43.7	Los Angeles County	Antelope Valley AP	N1, O
2	43.7	43.8	Los Angeles County	Antelope Valley AP	N1, O, O-W
2	43.8	43.9	Los Angeles County	Antelope Valley AP	N1, O
2	43.9	44.7	Los Angeles County	Antelope Valley AP	N1

Alternative	From Mile	To Mile	Land Jurisdiction within Centerline	Applicable Land Use Plan	Land Use Plan Designation within Impact Corridor
2	44.7	44.8	Los Angeles County	Antelope Valley AP	N1, N2
2	44.8	45.0	Los Angeles County	Antelope Valley AP	N2
2	45.0	45.2	Los Angeles County	Antelope Valley AP	N1, N2
2	45.2	45.4	Los Angeles County	Antelope Valley AP	N2
2	45.4	45.6	Los Angeles County	Antelope Valley AP	N1, N2
2	45.6	46.0	Los Angeles County	Antelope Valley AP	N2
2	46.0	46.2	Los Angeles County	Antelope Valley AP	N2, O-NF
2	46.2	47.6	USFS	ANFLMP	DAI
2	47.6	47.9	Los Angeles County	Antelope Valley AP	N1, O-NF
2	47.9	48.4	USFS	ANFLMP	DAI
2	48.4	49.1	Los Angeles County	Antelope Valley AP	N2
2	49.1	49.8	USFS	ANFLMP	DAI
2	49.8	50.1	Los Angeles County	Antelope Valley AP	N2
2	50.1	50.3	USFS	ANFLMP	DAI
2	50.3	50.4	USFS	ANFLMP	BC, DAI
2	50.4	51.0	USFS	ANFLMP	BC
2	51.0	51.1	USFS	ANFLMP	BC, DAI
2	51.1	52.7	USFS	ANFLMP	DAI
2	52.7	52.9	USFS	ANFLMP	BC, DAI
2	52.9	60.5	USFS	ANFLMP	BC
2	60.5	60.6	Los Angeles County	Santa Clarita Valley AP	O-NF
2	60.6	60.8	Los Angeles County	Santa Clarita Valley AP	O-NF*

TABLE F-4. LAND USE PLAN DESIGNATIONS CROSSED BY ALTERNATIVE 2A (GREEN VALLEY BYPASS)

Alternative	From Mile	To Mile	Land Jurisdiction within Centerline	Applicable Land Use Plan	Land Use Plan Designation within Impact Corridor
2a-Green Valley Bypass	0.0	0.9	Los Angeles County	Antelope Valley AP	N2
2a-Green Valley Bypass	0.9	4.9	USFS	ANFLMP	BC
2a-Green Valley Bypass	4.9	5.9	USFS	ANFLMP	BC, BCNM
2a-Green Valley Bypass	5.9	6.6	USFS	ANFLMP	BC

TABLE F-5. LAND USE PLAN DESIGNATIONS CROSSED BY ALTERNATIVE 3

Alternative	From Mile	To Mile	Land Jurisdiction within Centerline	Applicable Land Use Plan	Land Use Plan Designation within Impact Corridor	Comments
3	0.0	0.9	Kern County	Kern County GP	RM	
3	0.9	2.2	BLM	CDCA, WEMO	MUC Limited	
3	2.2	2.6	Kern County	Kern County GP	RM	
3	2.6	3.5	BLM	CDCA, WEMO	MUC Limited	
3	3.5	4.0	Kern County	Kern County GP	RM	
3	4.0	4.7	BLM	CDCA, WEMO	MUC Limited	
3	4.7	5.4	Kern County	Kern County GP	RM	
3	5.4	6.0	BLM	CDCA, WEMO	MUC Limited	
3	6.0	7.0	Kern County	Kern County GP	Eag	
3	7.0	7.2	BLM	CDCA, WEMO	MUC Limited	
3	7.2	10.3	Kern County	Kern County GP	Eag	
3	10.3	10.5	Kern County	Kern County GP	EAg, RM	
3	10.5	11.3	Kern County	Kern County GP	OF, RM	
3	11.3	11.9	Kern County	Kern County GP	RM	
3	11.9	13.5	Kern County	Kern County GP	OF, RM	
3	13.5	13.7	Kern County	Kern County GP	OF, RAg, RM	
3	13.7	13.9	Kern County	Kern County GP	MP, OF, RAg	
3	13.9	14.1	Kern County	Kern County GP	MP, OF	
3	14.1	14.2	Kern County	Kern County GP	Max4, MP, OF	
3	14.2	15.1	Kern County	Kern County GP	Max4, OF	
3	15.1	15.2	Kern County	Kern County GP	Max4, Min2.5, OF	
3	15.2	15.6	Kern County	Kern County GP	Min2.5, OF	
3	15.6	15.7	Kern County	Kern County GP	Max4, Min2.5, OF	
3	15.7	15.9	Kern County	Kern County GP	Max4, OF	
3	15.9	16.0	Kern County	Kern County GP	Max29, Max4, OF	
3	16.0	16.1	Kern County	Kern County GP	Max16, Max29, Max4, OF	
3	16.1	16.2	Kern County	Kern County GP	Max16, Max4, OF	
3	16.2	16.7	Kern County	Kern County GP	Max4, OF	
3	16.7	16.8	Kern County	Kern County GP	EAg, Max4, Min2.5, OF	
3	16.8	17.0	Kern County	Kern County GP	EAg, Min2.5, OF	
3	17.0	17.2	Kern County	Kern County GP	EAg, Min2.5	
3	17.2	17.7	Kern County	Kern County GP	EAg	
3	17.7	17.8	Kern County	Kern County GP	EAg, Gb, LDR	
3	17.8	21.0	Kern County	Kern County GP	Gb, LDR	
3	21.0	21.1	Kern County	Kern County GP	EAg, Gb, LDR	
3	21.1	21.2	Kern County	Kern County GP	EAg, Gb	
3	21.2	22.2	Kern County	Kern County GP	EAg	
3	22.2	23.1	Kern County	Kern County GP	EAg, SPR	
3	23.1	23.3	Kern County	Kern County GP	SPR	
3	23.3	23.4	Kern County	Kern County GP	EAg, SPR	
3	23.4	23.6	Kern County	Kern County GP	EAg	
3	23.6	24.0	Kern County	Kern County GP	EAg, RM	
3	24.0	26.2	Kern County	Kern County GP	EAg	
3	26.2	26.3	Kern County	Kern County GP	EAg, IAg	
3	26.3	26.4	Kern County	Kern County GP	EAg	
3	26.4	26.7	Kern County	Kern County GP	EAg, IAg	

Alternative	From Mile	To Mile	Land Jurisdiction within Centerline	Applicable Land Use Plan	Land Use Plan Designation within Impact Corridor	Comments
3	26.7	26.8	Kern County	Kern County GP	IAg, Min2.5	
3	26.8	26.9	Kern County	Kern County GP	IAg, Min2.5, OF	
3	26.9	27.4	Kern County	Kern County GP	Min2.5, OF	
3	27.4	27.6	Kern County	Kern County GP	GCom, Min2.5, OF	
3	27.6	27.7	Kern County	Kern County GP	GCom, Max1, OF	
3	27.7	27.9	Kern County	Kern County GP	Max1, OF	
3	27.9	28.0	Kern County	Kern County GP	Max1, Min2.5, OF	
3	28.0	29.0	Kern County	Kern County GP	Min2.5, OF	
3	29.0	29.2	Kern County	Kern County GP	Max10CPA, Min2.5, OF	
3	29.2	29.3	Kern County	Kern County GP	Max10CPA, OF	
3	29.3	29.4	Kern County	Kern County GP	Max10CPA, Min2.5, OF	
3	29.4	29.5	Kern County	Kern County GP	Min2.5, OF	
3	29.5	29.7	Kern County	Kern County GP	GCom, Min2.5, OF	
3	29.7	30.2	Kern County	Kern County GP	GCom, OF	
3	30.2	30.3	Kern County	Kern County GP	GCom, Min2.5, OF	
3	30.3	30.5	Kern County	Kern County GP	Min2.5, OF	
3	30.5	30.9	Kern County	Kern County GP	Max10, Min2.5, OF	
3	30.9	31.3	Kern County	Kern County GP	Min2.5, OF	
3	31.3	31.5	Kern County	Kern County GP	IAg, Min2.5, OF	
3	31.5	31.7	Kern County	Kern County GP	IAg, OF, RM	
3	31.7	32.4	Kern County	Kern County GP	OF, RM	
3	32.4	32.6	Kern County	Kern County GP	Max10CPA, OF, RM	
3	32.6	33.0	Kern County	Kern County GP	Max10CPA, OF	
3	33.0	33.2	Kern County	Kern County GP	Max1CPA, Max10CPA, OF	
3	33.2	33.6	Kern County	Kern County GP	Max1CPA, OF	
3	33.6	41.5	Los Angeles County	Antelope Valley AP	N1	
3	41.5	45.9	Lancaster	Lancaster GP	NU	
3	45.9	46.2	Lancaster	Lancaster GP	NU, UR	
3	46.2	47.4	Lancaster	Lancaster GP	UR	
3	47.4	48.2	Palmdale	Palmdale GP	SFR-1	
3	48.2	48.5	Palmdale	Palmdale GP	Aqueduct, SFR-1	
3	48.5	48.6	Palmdale	Palmdale GP	Aqueduct, LDR	
3	48.6	48.8	Palmdale	Palmdale GP	LDR, MRE	
3	48.8	49.1	Palmdale	Palmdale GP	MRE	
3	49.1	49.3	Palmdale	Palmdale GP	LDR, MRE	
3	49.3	50.0	Palmdale	Palmdale GP	LDR	
3	50.0	51.3	Los Angeles County	Antelope Valley AP	N1	
3	51.3	51.5	Los Angeles County	Antelope Valley AP	N1	Two Residences
3	51.5	51.6	Palmdale	Palmdale GP, Ritter Ranch SP		One Residence
3	51.6	53.9	Palmdale	Palmdale GP, Ritter Ranch SP		
3	53.9	54.9	Palmdale	Palmdale GP, Ritter Ranch SP, City Ranch SP		

Alternative	From Mile	To Mile	Land Jurisdiction within Centerline	Applicable Land Use Plan	Land Use Plan Designation within Impact Corridor	Comments
3	54.9	56.4	Palmdale	Palmdale GP, Ritter Ranch SP		
3	56.4	58.0	Palmdale	Palmdale GP, Ritter Ranch SP	PF	
3	58.0	59.5	Los Angeles County	Santa Clarita Valley AP	HM	
3	59.5	59.6	Los Angeles County	Santa Clarita Valley AP	HM, N1	
3	59.6	59.9	Los Angeles County	Santa Clarita Valley AP	N1	
3	59.9	60.1	Los Angeles County	Santa Clarita Valley AP	HM, N1	
3	60.1	60.4	Los Angeles County	Santa Clarita Valley AP	HM	
3	60.4	61.3	USFS	ANFLMP	BC	
3	61.3	61.5	Los Angeles County	Santa Clarita Valley AP	O-NF	
3	61.5	61.9	USFS	ANFLMP	BC	
3	61.9	62.1	Los Angeles County	Santa Clarita Valley AP	N1, O-NF	
3	62.1	62.4	Los Angeles County	Santa Clarita Valley AP	N1	
3	62.4	62.5	Los Angeles County	Santa Clarita Valley AP	N1	One Residence
3	62.5	62.6	Los Angeles County	Santa Clarita Valley AP	N1	
3	62.6	62.7	Los Angeles County	Santa Clarita Valley AP	N1	One Residence
3	62.7	62.8	Los Angeles County	Santa Clarita Valley AP	N1	
3	62.8	62.9	Los Angeles County	Santa Clarita Valley AP	N1	One Residence
3	62.9	63.0	Los Angeles County	Santa Clarita Valley AP	N1	
3	63.0	63.1	Los Angeles County	Santa Clarita Valley AP	N1	One Residence
3	63.1	63.3	Los Angeles County	Santa Clarita Valley AP	N1	
3	63.3	63.5	Los Angeles County	Santa Clarita Valley AP	HM, N1	
3	63.5	66.7	Los Angeles County	Santa Clarita Valley AP	HM	
3	66.7	67.0	Los Angeles County	Santa Clarita Valley AP	HM, W	
3	67.0	67.7	USFS	ANFLMP	BC	
3	67.7	68.3	Los Angeles County	Santa Clarita Valley AP	HM, O-NF, P	
3	68.3	69.4	Los Angeles County	Santa Clarita Valley AP	HM, P	
3	69.4	69.5	Los Angeles County	Santa Clarita Valley AP	HM, N1, P, W	
3	69.5	69.7	Los Angeles County	Santa Clarita Valley AP	N1, P, W	
3	69.7	70.9	Los Angeles County	Santa Clarita Valley AP	N1, P	
3	70.0	70.1	Los Angeles County	Santa Clarita Valley AP	HM, N1, P, W	
3	70.1	70.2	Los Angeles County	Santa Clarita Valley AP	HM, N1, P	
3	70.2	71.2	Los Angeles County	Santa Clarita Valley AP	HM, P	
3	71.2	71.3	Los Angeles County	Santa Clarita Valley AP	HM	
3	71.3	71.4	Los Angeles County	Santa Clarita Valley AP	HM, N2	
3	71.4	72.2	Los Angeles County	Santa Clarita Valley AP	N2, W	
3	72.2	72.3	Los Angeles County	Santa Clarita Valley AP	C, N2, W	
3	72.3	72.4	Los Angeles County	Santa Clarita Valley AP	C, HM, N2, W	
3	72.4	72.6	Los Angeles County	Santa Clarita Valley AP	HM, N2	
3	72.6	72.7	Los Angeles County	Santa Clarita Valley AP	N2	
3	72.7	72.8	Los Angeles County	Santa Clarita Valley AP	HM, N2	
3	72.8	73.2	Los Angeles County	Santa Clarita Valley AP	N2	
3	73.2	73.3	Los Angeles County	Santa Clarita Valley AP	HM, N2, O/BLM	
3	73.3	73.4	Los Angeles County	Santa Clarita Valley AP	HM, O/BLM	
3	73.4	73.8	Los Angeles County	Santa Clarita Valley AP	HM, N2	
3	73.8	74.2	Los Angeles County	Santa Clarita Valley AP	HM	
3	74.2	74.4	Los Angeles County	Santa Clarita Valley AP	HM, N2, P	
3	74.4	74.5	Los Angeles County	Santa Clarita Valley AP	HM, P	

Alternative	From Mile	To Mile	Land Jurisdiction within Centerline	Applicable Land Use Plan	Land Use Plan Designation within Impact Corridor	Comments
3	74.5	74.6	Los Angeles County	Santa Clarita Valley AP	HM, N2, P, W	
3	74.6	74.7	Los Angeles County	Santa Clarita Valley AP	HM, P, W	
3	74.7	74.9	Los Angeles County	Santa Clarita Valley AP	N2, P, W	
3	74.9	75.1	Los Angeles County	Santa Clarita Valley AP	P	
3	75.1	75.2	Los Angeles County	Santa Clarita Valley AP	HM, O-NF, P, W	
3	75.2	75.3	Los Angeles County	Santa Clarita Valley AP	O-NF, P	
3	75.3	75.7	Los Angeles County	Santa Clarita Valley AP	O-NF	

TABLE F-6. EXISTING AND PLANNED RESIDENTIAL AND NON-RESIDENTIAL PROJECTS TRAVERSED BY ALTERNATIVE 1

From Mile	To Mile	Project	Type	Jurisdiction	Status
0.4	0.6	Ridge Rider Solar Park Project	public facilities and utilities	Kern County	pending/under review
2.0	2.6	RE Distributed Solar-Barren Ridge 1	public facilities and utilities	Kern County	pending/under review
3.3	4.2	PM 6145	residential	Kern County	approved/recorded
10.4	10.5	PM 9755	residential	Kern County	approved/recorded
10.5	10.9	Mojave Specific Plan; PM 9755	residential	Kern County	approved/recorded
10.9	11.1	Mojave Specific Plan	residential	Kern County	approved/recorded
11.1	11.3	Mojave Specific Plan; TR Aqueduct 2 & 3	residential	Kern County	approved/recorded
11.3	11.8	Mojave Specific Plan; TR Aqueduct 2	residential	Kern County	approved/recorded
11.8	12.0	Mojave Specific Plan; TR Aqueduct 1 & 2	residential	Kern County	approved/recorded
12.0	12.1	Mojave Specific Plan; TR Aqueduct 1	residential	Kern County	approved/recorded
12.1	12.2	Mojave Specific Plan	residential	Kern County	approved/recorded
12.2	12.6	Mojave Specific Plan; Alta East Wind	residential; public facilities and utilities	Kern County	approved/recorded; under review
12.7	13.0	Mojave Specific Plan	residential	Kern County	approved/recorded
13.0	13.2	Mojave Specific Plan; PM 2385, PM 2958	residential	Kern County	approved/recorded
13.2	13.3	Mojave Specific Plan; PM 2958	residential	Kern County	approved/recorded
13.3	13.4	Mojave Specific Plan; PM 2958; Alta East Wind	residential; public facilities and utilities	Kern County	approved/recorded; under review
13.4	13.7	Mojave Specific Plan; Alta East Wind	Residential; public facilities and utilities	Kern County	approved/recorded; under review
13.7	14.1	Mojave Specific Plan	residential	Kern County	approved/recorded
14.1	14.6	Mojave Specific Plan; PM 9106	residential	Kern County	approved/recorded
14.6	15.2	Mojave Specific Plan	residential	Kern County	approved/recorded
17.6	18.3	Alta-Oak Creek Mojave Wind Energy Project; Windstar Wind Project	public facilities and utilities	Kern County	approved-under construction; approved
18.3	18.6	PM 2490; Alta-Oak Creek Mojave Wind Energy Project; Windstar Wind Project	public facilities and utilities	Kern County	approved/recorded; approved-under construction; approved
18.6	18.9	Alta-Oak Creek Mojave Wind Energy Project; Windstar Wind Project	public facilities and utilities	Kern County	approved-under construction; approved
18.9	21.2	Alta-Oak Creek Mojave Wind Energy Project	public facilities and utilities	Kern County	approved-under construction
21.2	21.3	PM 3600; Alta-Oak Creek Mojave Wind Energy Project	public facilities and utilities	Kern County	approved/recorded; approved-under construction
21.3	21.5	PM 3600; Alta-Oak Creek Mojave Wind Energy Project; Avalon Wind Project	public facilities and utilities	Kern County	approved/recorded; approved-under construction; pending/under review
21.5	23.3	Avalon Wind Project	public facilities and utilities	Kern County	pending/under review
23.6	25.4	Avalon Wind Project	public facilities and utilities	Kern County	pending/under review
25.6	27.7	Catalina Wind	public facilities and utilities	Kern County	pending/under review

BARREN RIDGE RENEWABLE TRANSMISSION PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT/ENVIRONMENTAL IMPACT REPORT
APPENDIX F

From Mile	To Mile	Project	Type	Jurisdiction	Status
28.5	29.8	Catalina Wind	public facilities and utilities	Kern County	pending/under review
29.8	30.4	PM 2490; Catalina Wind	Residential; public facilities and utilities	Kern County	approved/recorded; pending/under review
30.4	30.9	Catalina Wind	public facilities and utilities	Kern County	pending/under review
30.9	31.0	Catalina Wind, Pacific Wind Infill	public facilities and utilities	Kern County	pending/under review
31.0	31.6	Pacific Wind Infill	public facilities and utilities	Kern County	pending/under review
31.6	31.8	Willow Springs Specific Plan; Pacific Wind Project; Pacific Wind Infill	residential; public facilities and utilities	Kern County	approved/recorded; approved-construction Fall 2011; pending/under review
31.8	32.3	Willow Springs Specific Plan; Pacific Wind Project	residential; public facilities and utilities	Kern County	approved/recorded; approved-construction Fall 2011
32.3	32.9	Willow Springs Specific Plan; Pacific Wind Project; Pacific Wind Infill	residential; public facilities and utilities	Kern County	approved/recorded; approved-construction Fall 2011; pending/under review
32.9	33.1	Willow Springs Specific Plan; PdV Wind Energy Project; Pacific Wind Project ; Pacific Wind Infill	residential; public facilities and utilities	Kern County	approved/recorded; approved-under construction; approved-construction Fall 2011; pending/under review
33.1	33.3	Willow Springs Specific Plan; Pacific Wind Project; Pacific Wind Infill	residential; public facilities and utilities	Kern County	approved/recorded; approved-construction Fall 2011; pending/under review
33.3	33.8	Willow Springs Specific Plan; Pacific Wind Project	residential; public facilities and utilities	Kern County	approved/recorded; approved-construction Fall 2011
33.8	34.0	Willow Springs Specific Plan; PM 1757; Pacific Wind Project	residential; public facilities and utilities	Kern County	approved/recorded; approved/recorded; approved-construction Fall 2011
34.0	34.2	Willow Springs Specific Plan	residential	Kern County	approved/recorded
34.2	35.2	Willow Springs Specific Plan	residential	Kern County	approved/recorded
35.2	36.3	Willow Springs Specific Plan; PM 467	residential	Kern County	approved/recorded
37.9	38.2	PM 2107	residential	Kern County	approved/recorded
38.5	38.8	PM 3763	residential	Kern County	approved/recorded
40.0	40.4	PM 10207	residential	Kern County	approved/recorded
40.4	40.5	PM 5064, PM 10207	residential	Kern County	approved/recorded
40.5	40.6	PM 985, PM 5064, PM 10207	residential	Kern County	approved/recorded
40.6	40.7	PM 985, PM 10207	residential	Kern County	approved/recorded
40.7	40.8	PM 10207	residential	Kern County	approved/recorded
40.9	42.0	PM 4389	residential	Kern County	approved/recorded
43.0	43.5	TR2508	residential	Kern County	approved/recorded
43.5	43.5	TR2507, TR2494, TR2508	residential	Kern County	approved/recorded
43.5	43.6	TR2507, TR2508	residential	Kern County	approved/recorded

From Mile	To Mile	Project	Type	Jurisdiction	Status
43.6	44.0	TR2507	residential	Kern County	approved/recorded
44.0	44.1	TR2507, TR2494	residential	Kern County	approved/recorded
44.1	44.5	TR2494	residential	Kern County	approved/recorded
51.7	54.0	Centennial Specific Plan; PM060022	multi-use	Los Angeles County	pending/under review
54.0	55.2	Centennial Specific Plan; PM060021; PM060022	multi-use	Los Angeles County	pending/under review
55.2	55.4	Centennial Specific Plan; PM060021	multi-use	Los Angeles County	pending/under review
73.3	75.0	Northlake Specific Plan	residential	Los Angeles County	pending/under review
75.0	75.9	Northlake Specific Plan; TR51852	residential	Los Angeles County	pending/under review
80.5	81.3	TR51644	residential	Los Angeles County	approved/recorded

TABLE F-7. EXISTING AND PLANNED RESIDENTIAL AND NON-RESIDENTIAL PROJECTS TRAVERSED BY ALTERNATIVE 2

From Mile	To Mile	Project	Type	Jurisdiction	Status
0.4	0.6	Ridge Rider Solar Park Project	public facilities and utilities	Kern County	pending/under review
2.0	2.6	RE Distributed Solar- Barren Ridge 1	public facilities and utilities	Kern County	pending/under review
3.3	4.2	PM 6145	residential	Kern County	approved/recorded
10.4	10.5	PM 9755	residential	Kern County	approved/recorded
10.5	10.9	Mojave Specific Plan; PM 9755	residential	Kern County	approved/recorded
10.9	11.1	Mojave Specific Plan	residential	Kern County	approved/recorded
11.1	11.3	Mojave Specific Plan; TR Aqueduct 2 & 3	residential	Kern County	approved/recorded
11.3	11.8	Mojave Specific Plan; TR Aqueduct 2	residential	Kern County	approved/recorded
11.8	12.0	Mojave Specific Plan; TR Aqueduct 1 & 2	residential	Kern County	approved/recorded
12.0	12.1	Mojave Specific Plan; TR Aqueduct 1	residential	Kern County	approved/recorded
12.1	12.2	Mojave Specific Plan	residential	Kern County	approved/recorded
12.2	12.6	Mojave Specific Plan; Alta East Wind	residential; public facilities and utilities	Kern County	approved/recorded; pending/under review
12.6	13.0	Mojave Specific Plan	residential	Kern County	approved/recorded
13.0	13.2	Mojave Specific Plan; PM 2385, PM 2958	residential	Kern County	approved/recorded
13.2	13.3	Mojave Specific Plan; PM 2958	residential	Kern County	approved/recorded
13.3	13.4	Mojave Specific Plan; PM 2958; Alta East Wind	residential; public facilities and utilities	Kern County	approved/recorded; pending/under review
13.4	13.7	Mojave Specific Plan; PM 2957	residential	Kern County	approved/recorded
13.7	14.3	Mojave Specific Plan	residential	Kern County	approved/recorded
14.3	14.5	Mojave Specific Plan; PM 8941	residential	Kern County	approved/recorded
14.5	17.0	Mojave Specific Plan	residential	Kern County	approved/recorded
17.7	18.8	Soledad Mountain-Elephant Butte Specific Plan; PM 11055	residential	Kern County	approved/recorded
18.8	18.9	Soledad Mountain-Elephant Butte Specific Plan; PM 11055; TR T3253	residential	Kern County	approved/recorded
18.9	19.0	Soledad Mountain-Elephant Butte Specific Plan; TR T3253	residential	Kern County	approved/recorded
19.0	19.2	Soledad Mountain-Elephant Butte Specific Plan; TR T3253; Alta-Oak Creek Mojave Wind Energy Project; Alta Wind Project	residential; public facilities and utilities	Kern County	approved/recorded; approved/recorded; approved-under construction; pending/under review
19.2	20.2	Soledad Mountain-Elephant Butte Specific Plan; Alta-Oak Creek Mojave Wind Energy Project; Alta Wind Project	residential; public facilities and utilities	Kern County	approved/recorded; approved-under construction; pending/under review
20.2	20.3	Soledad Mountain-Elephant Butte Specific Plan; Alta-Oak Creek Mojave Wind Energy Project; Alta Wind Project	residential; public facilities and utilities	Kern County	approved/recorded; approved-under construction; pending/under review
20.3	20.6	Soledad Mountain-Elephant Butte Specific Plan	residential	Kern County	approved/recorded

From Mile	To Mile	Project	Type	Jurisdiction	Status
20.6	20.9	Soledad Mountain-Elephant Butte Specific Plan; Avalon Wind	residential; public facilities and utilities	Kern County	approved/recorded; pending/under review
20.9	21.2	Soledad Mountain-Elephant Butte Specific Plan	residential	Kern County	approved/recorded
21.6	21.8	PM 9213	residential	Kern County	approved/recorded
21.8	22.0	PM 9213; Avalon Wind Project	residential; public facilities and utilities	Kern County	approved/recorded; pending/under review
22.0	22.2	Avalon Wind Project	public facilities and utilities	Kern County	pending/under review
22.7	23.1	TR 3474	residential	Kern County	approved/recorded
23.1	23.3	TR 3474; Avalon Wind Project	residential; public facilities and utilities	Kern County	approved/recorded; pending/under review
23.3	23.4	PM 7901; TR 3474; Avalon Wind Project	residential; public facilities and utilities	Kern County	approved/recorded; approved/recorded; pending/under review
23.4	23.5	PM 7901; Avalon Wind Project	residential; public facilities and utilities	Kern County	approved/recorded; pending/under review
26.7	27.9	Willow Springs Specific Plan	residential	Kern County	approved/recorded
27.9	29.2	Willow Springs Specific Plan; TR 3263	residential	Kern County	approved/recorded
29.2	29.4	Willow Springs Specific Plan	residential	Kern County	approved/recorded
29.4	30.3	Willow Springs Specific Plan; PM 198	residential	Kern County	approved/recorded
30.3	30.5	Willow Springs Specific Plan; Antelope Valley Water Bank Project	residential; public facilities and utilities	Kern County	approved/recorded; pending/under review (Antelope Valley Water Bank Project)
30.5	30.9	Willow Springs Specific Plan; Rosamond Solar Array Project; Antelope Valley Water Bank Project	residential; public facilities and utilities	Kern County	approved/recorded; approved (Rosamond Solar Array Project and Antelope Valley Water Bank Project)
30.9	31.1	Willow Springs Specific Plan; Antelope Valley Water Bank Project	residential; public facilities and utilities	Kern County	approved/recorded; approved (Antelope Valley Water Bank Project)
31.1	32.6	Willow Springs Specific Plan; Rosamond Solar Array Project; Antelope Valley Water Bank)	residential; public facilities and utilities	Kern County	approved/recorded; approved (Rosamond Solar Array Project and Antelope Valley Water Bank)
32.6	33.7	Willow Springs Specific Plan; Rosamond Solar Array Project	residential; public facilities and utilities	Kern County	approved/recorded; approved (Rosamond Solar Array Project)

TABLE F-8. EXISTING AND PLANNED RESIDENTIAL AND NON-RESIDENTIAL PROJECTS TRAVERSED BY ALTERNATIVE 3

From Mile	To Mile	Project	Type	Jurisdiction	Status
0.4	0.6	Ridge Rider Solar Park Project	public facilities and utilities	Kern County	pending/under review
2.0	2.6	RE Distributed Solar- Barren Ridge 1	public facilities and utilities	Kern County	pending/under review
3.3	4.2	PM 6145	residential	Kern County	approved/recorded
10.4	10.5	PM 9755	residential	Kern County	approved/recorded
10.5	10.9	Mojave Specific Plan; PM 9755	residential	Kern County	approved/recorded
10.9	11.1	Mojave Specific Plan	residential	Kern County	approved/recorded
11.1	11.3	Mojave Specific Plan; TR Aqueduct 2 & 3	residential	Kern County	approved/recorded
11.3	11.8	Mojave Specific Plan; TR Aqueduct 2	residential	Kern County	approved/recorded
11.8	12.0	Mojave Specific Plan; TR Aqueduct 1 & 2	residential	Kern County	approved/recorded
12.0	12.1	Mojave Specific Plan; TR Aqueduct 1	residential	Kern County	approved/recorded
12.1	12.2	Mojave Specific Plan	residential	Kern County	approved/recorded
12.2	12.6	Mojave Specific Plan; Alta East Wind	residential; public facilities and utilities	Kern County	approved/recorded; pending/under review
12.6	13.0	Mojave Specific Plan	residential	Kern County	approved/recorded
13.0	13.2	Mojave Specific Plan; PM 2385, PM 2958	residential	Kern County	approved/recorded
13.2	13.3	Mojave Specific Plan; PM 2958	residential	Kern County	approved/recorded
13.3	13.4	Mojave Specific Plan; PM 2958; Alta East Wind	residential; public facilities and utilities	Kern County	approved/recorded; pending/under review
13.4	13.7	Mojave Specific Plan; PM 2957	residential	Kern County	approved/recorded
13.7	14.3	Mojave Specific Plan	residential	Kern County	approved/recorded
14.3	14.5	Mojave Specific Plan; PM 8941	residential	Kern County	approved/recorded
14.5	17.0	Mojave Specific Plan	residential	Kern County	approved/recorded
17.7	18.8	Soledad Mountain-Elephant Butte Specific Plan; PM 11055	residential	Kern County	approved/recorded
18.8	18.9	Soledad Mountain-Elephant Butte Specific Plan; PM 11055; TR T3253	residential	Kern County	approved/recorded
18.9	19.0	Soledad Mountain-Elephant Butte Specific Plan; TR T3253	residential	Kern County	approved/recorded
19.0	19.2	Soledad Mountain-Elephant Butte Specific Plan; TR T3253; Alta-Oak Creek Mojave Wind Energy Project; Alta Wind Project	residential; public facilities and utilities	Kern County	approved/recorded; pending/under review
19.2	20.2	Soledad Mountain-Elephant Butte Specific Plan; Alta-Oak Creek Mojave Wind Energy Project; Alta Wind Project	residential; public facilities and utilities	Kern County	approved/recorded; pending/under review
20.2	20.3	Soledad Mountain-Elephant Butte Specific Plan; Alta-Oak Creek Mojave Wind Energy Project; Alta Wind Project	residential; public facilities and utilities	Kern County	approved/recorded; approved-under construction; pending/under review
20.3	20.6	Soledad Mountain-Elephant Butte Specific Plan	residential	Kern County	approved/recorded

From Mile	To Mile	Project	Type	Jurisdiction	Status
20.6	20.9	Soledad Mountain-Elephant Butte Specific Plan; Avalon Wind	residential; public facilities and utilities	Kern County	approved/recorded; pending/under review
20.9	21.2	Soledad Mountain-Elephant Butte Specific Plan	residential	Kern County	approved/recorded
21.6	21.8	PM 9213	residential	Kern County	approved/recorded
21.8	22.0	PM 9213; Avalon Wind Project	residential; public facilities and utilities	Kern County	approved/recorded; pending/under review
22.0	22.2	Avalon Wind Project	public facilities and utilities	Kern County	pending/under review
22.7	23.1	TR 3474	residential	Kern County	approved/recorded
23.1	23.3	TR 3474; Avalon Wind Project	residential; public facilities and utilities	Kern County	approved/recorded; pending/under review
23.3	23.4	PM 7901; TR 3474; Avalon Wind Project	residential; public facilities and utilities	Kern County	approved/recorded; approved/recorded; pending/under review
23.4	23.5	PM 7901; Avalon Wind Project	residential; public facilities and utilities	Kern County	approved/recorded; pending/under review
26.7	27.9	Willow Springs Specific Plan	residential	Kern County	approved/recorded
27.9	29.2	Willow Springs Specific Plan; TR 3263	residential	Kern County	approved/recorded
29.2	29.4	Willow Springs Specific Plan	residential	Kern County	approved/recorded
29.4	30.3	Willow Springs Specific Plan; PM 198	residential	Kern County	approved/recorded
30.3	30.5	Willow Springs Specific Plan	residential	Kern County	approved/recorded
30.5	30.9	Willow Springs Specific Plan; Rosamond Solar Array Project	residential; public facilities and utilities	Kern County	approved/recorded; approved
30.9	31.1	Willow Springs Specific Plan	residential	Kern County	approved/recorded
31.1	33.7	Willow Springs Specific Plan; Rosamond Solar Array Project	residential; public facilities and utilities	Kern County	approved/recorded; approved
46.8	47.1	VTTM 066062 (includes school site property (Westside Union School District))	residential; institutional	City of Lancaster	approved/recorded
51.5	53.9	Ritter Ranch Specific Plan	residential	City of Palmdale	approved/recorded
53.9	54.9	Ritter Ranch Specific Plan; City Ranch Specific Plan	residential	City of Palmdale	approved/recorded
54.9	58.0	Ritter Ranch Specific Plan	residential	City of Palmdale	approved/recorded

TABLE F-9. AGRICULTURAL RESOURCES TRAVERSED BY ALTERNATIVE 1

From Mile	To Mile	Type of Agricultural Resource	Williamson Act Contract
Kern County			
13.7	14.1	Grazing Land	No
14.4	15.2	Grazing Land	No
15.6	15.8	Grazing Land	No
15.9	16.1	Grazing Land	No
16.4	16.5	Grazing Land	No
16.6	17.4	Grazing Land	No
17.8	23.6	Grazing Land	No
24.4	26.2	Grazing Land	No
26.6	27.5	Grazing Land	No
28.0	28.9	Grazing Land	No
30.0	30.4	Grazing Land	No
30.4	30.9	Grazing Land	Yes
30.9	31.0	-	Yes
31.0	31.3	Grazing Land	No
38.7	39.6	-	Yes
44.3	45.4	Grazing Land	No
Los Angeles County			
45.4	45.8	Grazing Land	No
45.8	45.9	Farmland of Local Importance, Grazing Land (Cropland)	No
45.9	46.4	Farmland of Local Importance (Cropland)	No
46.4	46.5	Farmland of Local Importance, Grazing Land (Cropland)	No
46.5	48.0	Grazing Land	No
48.0	48.1	Farmland of Local Importance, Grazing Land (Cropland)	No
48.1	48.6	Farmland of Local Importance (Cropland)	No
48.7	50.1	Farmland of Local Importance (Cropland)	No
50.1	50.2	Farmland of Local Importance, Grazing Land (Cropland)	No
50.2	58.3	Grazing Land	No
72.3	76.7	Grazing Land	No
77.4	78.3	Grazing Land	No
80.0	80.3	Grazing Land	No
80.6	81.6	Grazing Land	No

TABLE F-10. AGRICULTURAL RESOURCES TRAVERSED BY ALTERNATIVE 2

From Mile	To Mile	Type of Agricultural Resource	Williamson Act Contract
Kern County			
25.1	25.2	Prime Farmland	No
25.2	25.3	Prime Farmland, Unique Farmland, Farmland of Statewide Importance (Cropland)	No
25.3	25.6	Unique Farmland, Farmland of Statewide Importance (Cropland)	No
25.6	26.6	Farmland of Statewide Importance (Cropland)	No
26.6	26.9	Farmland of Statewide Importance, Grazing Land (Cropland)	No
27.3	27.4	Farmland of Statewide Importance (Cropland)	No
27.4	27.5	Cropland	No
30.3	30.4	Prime Farmland	No
30.4	30.5	Prime Farmland (Cropland)	No
30.5	30.6	Prime Farmland, Farmland of Statewide Importance (Cropland)	No
30.6	30.7	Prime Farmland, Unique Farmland, Farmland of Statewide Importance (Cropland)	No
30.7	30.9	Prime Farmland, Unique Farmland (Cropland)	No
31.3	31.4	Farmland of Statewide Importance (Cropland)	No
31.4	31.8	Unique Farmland, Farmland of Statewide Importance (Cropland)	No
31.8	31.9	Grazing Land	No
33.1	33.6	Prime Farmland (Cropland)	No
33.6	33.7	Prime Farmland, Grazing Land (Cropland)	No
Los Angeles County			
33.7	40.1	Grazing Land	No
40.1	40.3	Farmland of Local Importance, Grazing Land (Cropland)	No
40.3	40.8	Farmland of Local Importance	No
40.8	41.1	Farmland of Local Importance, Grazing Land (Cropland)	No
41.1	41.8	Grazing Land	No
42.2	42.3	Farmland of Local Importance	No
42.7	43.5	Farmland of Local Importance, Grazing Land	No
43.5	43.7	Farmland of Local Importance, Grazing Land (Cropland)	No
43.7	43.8	Farmland of Local Importance, Grazing Land	No
43.8	43.9	Grazing Land	No
44.3	45.7	Grazing Land	No

TABLE F-11. AGRICULTURAL RESOURCES TRAVERSED BY ALTERNATIVE 3

From Mile	To Mile	Type of Agricultural Resource	Williamson Act Contract
Kern County			
25.1	25.2	Prime Farmland	No
25.2	25.3	Prime Farmland, Unique Farmland, Farmland of Statewide Importance (Cropland)	No
25.3	25.6	Unique Farmland, Farmland of Statewide Importance (Cropland)	No
25.6	26.6	Farmland of Statewide Importance (Cropland)	No
26.6	26.9	Farmland of Statewide Importance, Grazing Land (Cropland)	No
27.3	27.4	Farmland of Statewide Importance (Cropland)	No
27.4	27.5	Cropland	No
30.3	30.4	Prime Farmland	No
30.4	30.5	Prime Farmland (Cropland)	No
30.5	30.6	Prime Farmland, Farmland of Statewide Importance (Cropland)	No
30.6	30.7	Prime Farmland, Unique Farmland, Farmland of Statewide Importance (Cropland)	No
30.7	30.9	Prime Farmland, Unique Farmland (Cropland)	No
31.3	31.4	Farmland of Statewide Importance (Cropland)	No
31.4	31.8	Unique Farmland, Farmland of Statewide Importance, Grazing Land (Cropland)	No
31.8	31.9	Grazing Land	No
33.1	33.6	Prime Farmland (Cropland)	No
33.6	33.7	Prime Farmland, Grazing Land (Cropland)	No
Los Angeles County			
33.7	48.5	Grazing Land	No
71.5	71.8	Farmland of Statewide Importance (Cropland)	No
71.8	72.1	Prime Farmland, Farmland of Statewide Importance (Cropland)	No
72.1	72.3	Prime Farmland, Grazing Land (Cropland)	No
72.3	73.2	Grazing Land	No
73.3	75.2	Grazing Land	No

TABLE F-12. RECREATIONAL RESOURCES CROSSED BY ALTERNATIVE 1

Alternative	Mile From	Mile To	Land Jurisdiction within ROW	ANF ROS Objective	Recreational Resource Crossed by Impact Corridor
1	25.7	25.8	Kern County		RCSD Parks System Master Plan Trail (L13)
1	25.9	26.1	Kern County		RCSD Parks System Master Plan Trail (Aqueduct Major M4)
1	26.7	27.6	Kern County		RCSD Parks System Master Plan Trail (Aqueduct Major M4)
1	28.1	29.0	Kern County		RCSD Parks System Master Plan Trail (Aqueduct Major M4)
1	34.4	37.4	Kern County		Pacific Crest Trail
1	44.3	46.5	Kern County		Pacific Crest Trail
1	57.8	58.3	CDFG		Property Undesignated
1	58.3	58.6	USFS	Semi-Primitive Motorized	8N01 (OHV)
1	58.6	58.8	CDFG		Property Undesignated
1	58.8	58.9	USFS	Semi-Primitive Motorized	
1	58.9	59.0	USFS	Semi-Primitive Motorized	8N01 (OHV)
1	59.0	60.0	USFS	Semi-Primitive Motorized	
1	60.0	60.1	USFS	Semi-Primitive Motorized	8N01 (OHV)
1	60.1	60.5	USFS	Semi-Primitive Motorized	
1	60.5	60.7	USFS	Semi-Primitive Motorized	8N01 (OHV)
1	60.7	60.9	USFS	Semi-Primitive Motorized	
1	60.9	61.0	USFS	Roaded Natural, Semi-Primitive Motorized	
1	61.0	61.2	USFS	Roaded Natural	
1	61.2	61.3	USFS	Roaded Natural	8N01 (OHV)
1	61.3	62.8	USFS	Roaded Natural	
1	62.8	62.9	USFS	Roaded Natural	Old Ridge Road (8N04) (OHV) (currently under a temporary closure)
1	62.9	63.6	USFS	Roaded Natural	Salt Creek IRA - 1C
1	63.6	64.2	USFS	Roaded Natural	
1	64.2	64.3	USFS	Roaded Natural	Old Ridge Road (8N04) (OHV) (currently under a temporary closure)
1	64.3	64.7	USFS	Roaded Natural	
1	64.7	64.8	USFS	Roaded Natural	Old Ridge Road (8N04) (OHV) (currently under a temporary closure)
	64.8	65.0	USFS	Roaded Natural	
1	65.0	65.1	USFS	Roaded Natural	Salt Creek IRA - 1B
1	65.1	65.4	USFS	Roaded Natural, Semi-Primitive Non-motorized	Salt Creek IRA - 1B
1	65.4	66.0	USFS	Roaded Natural	Salt Creek IRA - 1B
1	66.0	66.1	USFS	Roaded Natural	
1	66.1	66.2	USFS	Roaded Natural	Old Ridge Road (8N04) (OHV) (currently under a temporary closure)
1	66.2	66.3	USFS	Roaded Natural	
1	66.3	66.4	USFS	Roaded Natural	Old Ridge Road (8N04) (OHV) (currently under a temporary closure)

Alternative	Mile From	Mile To	Land Jurisdiction within ROW	ANF ROS Objective	Recreational Resource Crossed by Impact Corridor
1	66.4	68.3	USFS	Roaded Natural	
1	68.3	68.5	USFS	Roaded Natural	6N43
1	68.5	69.8	USFS	Roaded Natural	
1	70.7	70.9	USFS	Roaded Natural	
1	71.1	72.4	USFS	Roaded Natural	
1	73.5	73.7	USFS	Roaded Natural, Semi-Primitive Motorized	Old Ridge Road (8N04) (OHV) (currently under a temporary closure)
1	74.2	74.7	Los Angeles County		LACRHT (Castaic Lake)
1	75.2	75.3	Los Angeles County		LACRHT (Castaic Lake)
1	75.3	76.3	State of California		Castaic Lake State Recreation Area; LACRHT (Castaic Lake)
1	76.3	76.7	State of California		Castaic Lake State Recreation Area
1	77.7	77.8	State of California		Castaic Lake State Recreation Area
1	77.8	77.9	State of California		Castaic Lake State Recreation Area; LACRHT (Castaic Lake)
1	77.9	78.1	State of California		Castaic Lake State Recreation Area
1	78.1	80.3	USFS	Semi-Primitive Non-Motorized	
1	80.5	80.8	Los Angeles County		LACRHT (Castaic Lake)
1	81.2	81.3	Los Angeles County		LACRHT (Castaic Lake)
1	81.4	81.6	USFS	Roaded Natural	
1	81.6	81.7	USFS	Roaded Natural, Semi-Primitive Motorized	
1	81.7	82.4	USFS	Semi-Primitive Motorized	
1	82.4	82.5	USFS	Semi-Primitive Motorized	5N29
1	82.5	83.2	USFS	Semi-Primitive Motorized	

*Examples of recreational resources associated with these ROS Objectives include: Natural Roaded (OHV use permitted on designated trails and "open riding" areas, Semi-Primitive/Motorized (OHV use permitted on designated trails), and Semi-Primitive Non-Motorized (Inventoried Roadless Areas).

RCSD - Rosamond Community Services District

LACRHT - Los Angeles County Riding and Hiking Trail

TABLE F-13. RECREATIONAL RESOURCES CROSSED BY ALTERNATIVE 2

Alternative	Mile From	Mile To	Land Jurisdiction	ANF ROS Objective*	Recreational Resource Crossed by Impact Corridor
2	23.3	25.5	Kern County		RCSD Parks System Master Plan Trail (M3)
2	25.6	25.7	Kern County		RCSD Parks System Master Plan Trails (L10, M3)
2	25.7	27.8	Kern County		RCSD Parks System Master Plan Trail (M3)
2	28.8	28.9	Kern County		RCSD Parks System Master Plan Trail (L11)
2	29.2	29.3	Kern County		RCSD Parks System Master Plan Trail (M3)
2	29.6	30.5	Kern County		RCSD Parks System Master Plan Trail (M3)
2	30.5	30.6	Kern County		RCSD Parks System Master Plan Trails (M2, M3)
2	30.6	32.1	Kern County		RCSD Parks System Master Plan Trail (M3)
2	32.1	32.2	Kern County		RCSD Parks System Master Plan Trails (L9, M3)
2	32.2	32.6	Kern County		RCSD Parks System Master Plan Trail (M3)
2	34.6	34.7	Los Angeles County		LACHRT (Little Buttes)
2	36.8	37.0	Los Angeles County		LACRHT (Little Buttes Trail and California Poppy)
2	45.1	45.2	Los Angeles County		LACRHT (North Side)
2	45.7	46.1	Los Angeles County		LACRHT (North Side)
2	46.2	46.3	USFS	Roaded Natural	Burns Road (7N01) (OHV)
2	46.3	46.5	USFS	Roaded Natural	
2	46.5	46.6	USFS	Roaded Natural	6N04.2 OHV
2	46.6	46.9	USFS	Roaded Natural	
2	46.9	47.3	USFS	Roaded Natural	Pacific Crest Trail
2	47.3	47.6	USFS	Roaded Natural	
2	47.9	48.4	USFS	Roaded Natural	
2	49.1	49.2	USFS	Roaded Natural	
2	49.2	50.1	USFS	Roaded Natural	San Francisquito Canyon Eligible Wild and Scenic River
2	50.1	50.3	USFS	Roaded Natural	San Francisquito Canyon Eligible Wild and Scenic River; 7N02 (OHV)
2	50.3	51.8	USFS	Roaded Natural	USFS Trail; San Francisquito Canyon Eligible Wild and Scenic River
2	51.8	52.1	USFS	Roaded Natural	San Francisquito Canyon Eligible Wild and Scenic River
2	52.1	53.2	USFS	Roaded Natural	San Francisquito Canyon Eligible Wild and Scenic River; City Highline Motorway
2	53.2	53.5	USFS	Roaded Natural	City Highline Motorway FR Rd (6N21) (OHV)
2	53.5	53.6	USFS	Roaded Natural	
2	53.6	53.7	USFS	Roaded Natural, Semi-Primitive Motorized	

Alternative	Mile From	Mile To	Land Jurisdiction	ANF ROS Objective*	Recreational Resource Crossed by Impact Corridor
2	53.7	53.8	USFS	Roaded Natural, Semi-Primitive Motorized	City Highline Motorway FR Rd (6N21) (OHV)
2	53.8	53.9	USFS	Semi-Primitive Motorized	
2	53.9	54.0	USFS	Semi-Primitive Motorized	City Highline Motorway FR Rd (6N21) (OHV)
2	54.0	54.3	USFS	Semi-Primitive Motorized	
2	54.3	54.6	USFS	Semi-Primitive Motorized	City Highline Motorway FR Rd (6N21) (OHV)
2	54.6	54.9	USFS	Semi-Primitive Motorized	
2	54.9	55.7	USFS	Semi-Primitive Motorized	City Highline Motorway FR Rd (6N21) (OHV)
2	55.7	58.0	USFS	Semi-Primitive Motorized	
2	58.0	58.2	USFS	Semi-Primitive Motorized	City Highline Motorway FR Rd (6N21) (OHV)
2	58.2	58.8	USFS	Semi-Primitive Motorized	
2	58.8	59.0	USFS	Semi-Primitive Motorized	Pettinger Canyon Road (5N28)
2	59.0	59.1	USFS	Semi-Primitive Motorized	
2	59.1	59.2	USFS	Semi-Primitive Motorized	City Highline Motorway FR Rd (6N21) (OHV)
2	59.2	59.3	USFS	Semi-Primitive Motorized	
2	59.3	59.4	USFS	Semi-Primitive Motorized	City Highline Motorway FR Rd (6N21) (OHV)
2	59.4	60.5	USFS	Semi-Primitive Motorized	

*Examples of recreational resources associated with these ROS Objectives include: Roaded Natural (OHV use permitted on designated trails and "open ridng" areas and Semi-Primitive Motorized (OHV use permitted on designated trails).

RCSD – Rosamond Community Services District

LACRHT – Los Angeles County Riding and Hiking Trail

TABLE F-14. RECREATIONAL RESOURCES CROSSED BY ALTERNATIVE 2A

Alternative	From Mile	To Mile	Land Jurisdiction	ANF ROS Objective	Recreational Resource Crossed by Impact Corridor
2a-Green Valley Bypass	0.0	0.1	Los Angeles County		LACRHT (North Side)
2a-Green Valley Bypass	0.9	2.3	USFS	Semi-Primitive Motorized	
2a-Green Valley Bypass	2.3	2.4	USFS	Semi-Primitive Motorized	7N02 (OHV)
2a-Green Valley Bypass	2.4	3.2	USFS	Semi-Primitive Motorized	
2a-Green Valley Bypass	3.2	3.3	USFS	Semi-Primitive Motorized	Pacific Crest Trail
2a-Green Valley Bypass	3.3	4.9	USFS	Semi-Primitive Motorized	
2a-Green Valley Bypass	4.9	5.9	USFS	Semi-Primitive Motorized, Semi-Primitive Non-motorized	Tule IRA - 1C
2a-Green Valley Bypass	5.9	6.2	USFS	Semi-Primitive Motorized	
2a-Green Valley Bypass	6.2	6.3	USFS	Roaded Natural, Semi-Primitive Motorized	
2a-Green Valley Bypass	6.3	6.4	USFS	Roaded Natural	
2a-Green Valley Bypass	6.4	6.5	USFS	Roaded Natural	San Francisquito Eligible Wild and Scenic River
2a-Green Valley Bypass	6.5	6.6	USFS	Roaded Natural	San Francisquito Eligible Wild and Scenic River; Adopted County Trail

*Examples of recreational resources associated with these ROS Objectives include: Natural Roaded (OHV use permitted on designated trails and "open ridng" areas, Semi-Primitive Motorized (OHV use permitted on designated trails), and Semi-Primitive Non-Motorized (Inventoried Roadless Areas).

LACRHT - Los Angeles County Riding and Hiking Trail

TABLE F-15. RECREATIONAL RESOURCES CROSSED BY ALTERNATIVE 3

Alternative	Mile From	Mile To	Land Jurisdiction	ANF ROS Objective	Recreational Resource Crossed by Impact Corridor
3	23.3	25.6	Kern County		RCSD Parks System Master Plan Trail (M3)
3	25.6	25.7	Kern County		RCSD Parks System Master Plan Trails (L10, M3)
3	25.7	27.8	Kern County		RCSD Parks System Master Plan Trail (M3)
3	28.8	28.9	Kern County		RCSD Parks System Master Plan Trail (L11)
3	29.2	29.3	Kern County		RCSD Parks System Master Plan Trail (M3)
3	29.6	30.5	Kern County		RCSD Parks System Master Plan Trail (M3)
3	30.5	30.6	Kern County		RCSD Parks System Master Plan Trails (M2, M3)
3	30.6	32.1	Kern County		RCSD Parks System Master Plan Trail (M3)
3	32.1	32.2	Kern County		RCSD Parks System Master Plan Trails (L9, M3)
3	32.2	32.6	Kern County		RCSD Parks System Master Plan Trail (M3)
3	34.6	34.7	Los Angeles County		LACRHT (Little Buttes)
3	36.8	37.0	Los Angeles County		LACRHT (Little Buttes and California Poppy)
3	41.5	41.7	Lancaster		LACRHT (California Poppy)
3	50.4	50.6	Los Angeles County		LACRHT North Side Trail
3	50.9	51.2	Los Angeles County		LACRHT North Side Connector Trail
3	53.8	53.9	Palmdale		MRCA Parkland Trail
3	53.9	54.2	Palmdale		City Trail
3	54.7	55.0	Palmdale		MRCA Parkland Trail
3	55.4	55.7	Palmdale		MRCA Parkland Trail
3	55.8	55.9	Palmdale		MRCA Parkland Trail
3	56.2	56.3	Palmdale		MRCA Parkland Trail
3	56.3	56.5	Palmdale		City Trail; MRCA Parkland Trail
3	56.6	57.0	Palmdale		MRCA Parkland Trail
3	57.0	57.3	Palmdale		Ritter Ranch (MRCA Property)
3	57.3	57.6	Palmdale		Ritter Ranch (MRCA Property); MRCA Parkland Trail
3	57.6	58.0	Palmdale		Ritter Ranch (MRCA Property)
3	59.7	59.8	Los Angeles County		LACRHT (Vasquez Loop)
3	60.4	62.0	USFS	Semi-Primitive Motorized	
3	62.0	62.1	USFS	Semi-Primitive Motorized	Pacific Crest Trail
3	62.1	62.2	Los Angeles County		LACHRT; Pacific Crest Trail
3	62.4	62.5	Los Angeles County		LACHRT; Pacific Crest Trail
3	62.5	63.1	Los Angeles County		LACHRT (Vasquez Loop)
3	66.8	66.9	Los Angeles County		LACHRT
3	66.9	70.1	USFS	Semi-Primitive Motorized	
3	70.1	70.2	Los Angeles County		LACHRT
3	70.2	70.3	Los Angeles County		
3	70.3	70.5	Los Angeles County		LACHRT
3	70.8	71.1	Los Angeles County		LACHRT

Alternative	Mile From	Mile To	Land Jurisdiction	ANF ROS Objective	Recreational Resource Crossed by Impact Corridor
3	71.1	71.2	Los Angeles County		
3	71.2	71.3	Los Angeles County		LACHRT
3	71.3	72.1	Los Angeles County		
3	72.1	72.3	Los Angeles County		Bouquet Canyon
3	74.6	75.2	USFS	Semi-Primitive Motorized	Pettinger Canyon Road (5N28)
3	75.2	75.5	USFS	Roaded Natural, Semi-Primitive Motorized	City Highline Motorway FR Rd (6N21) (OHV)

*Example of recreational resources associated with this ROS Objective: Semi-Primitive/Motorized (OHV) use permitted on designated trails).

RCSD - Rosamond Community Services District

LACRHT - Los Angeles County Riding and Hiking Trail

MRCA - Mountains Recreation and Conservation Authority

TABLE F-16. FEDERAL AVIATION ADMINISTRATION REGISTERED AIR FACILITIES LOCATED WITHIN 20,000 FEET OF THE PROPOSED ACTION AND ALTERNATIVES

County	City or Unincorporated Community	Type	Facility Name	Ownership	Use	Project Component
Kern	Mojave	Airport	Mojave	Public	Public	A 1, 2, 2a, 3, R
	Rosamond	Airport	Lloyd's Landing	Private	Private	A 1, 2, 2a, 3, R
	Rosamond	Airport	Skyotee Ranch	Private	Private	A 1, 2, 2a, 3, R
Los Angeles	Agua Dulce	Airport	Agua Dulce	Private	Public	A 3
	Castaic	Heliport	Castaic Dam	Public	Private	1, NC
	Gorman/Lancaster	Airport	Quail Lake Sky Park	Private	Private	1
	Lancaster	Airport	Bohunk's Airpark	Private	Private	3
	Lancaster	Airport	Little Buttes Antique Airfield	Private	Private	A 2, 2a, 3, R
	Los Angeles	Heliport	Dept. of Water and Power Granada Hills	Private	Private	R
	Los Angeles	Heliport	Devonshire Area	Public	Private	R
	Los Angeles	Airport	Whiteman	Public	Public	R
	Pacoima	Heliport	Barton	Public	Private	R
	San Fernando	Heliport	Holy Cross Medical Center	Private	Private	R
	San Fernando	Heliport	Spears	Private	Private	R
	Sylmar	Heliport	Merle Norman Cosmetics (Sylmar)	Private	Private	R
	Sylmar	Heliport	Olive View Medical Center	Private	Private	R
	Saugus	Heliport	Camp 14	Public	Private	2, 2a, R
	Valencia	Heliport	Henry Mayo Newhall Memorial Hospital	Private	Private	R
	Valencia	Heliport	Sheriff's Station	Public	Private	R
	Valencia	Heliport	Sheriff's Wayside	Public	Private	1, NC

Source: FAA, May 7, 2009

A – Alternative

R – Reconductor

NC – New Circuit

TABLE F-17. KCFD FIRE STATIONS

Station Name	Address	Areas Served	Service Area (square miles)	Equipment	Personnel	Proximity to Closest BRRTF Component
Tehachapi Station (Station 12)	800 South Curry Street Tehachapi, CA 93561	Tehachapi	220	1- fire engine 1- 4x4 patrol	1- Captain 1- Engineer 1- Firefighter	13.9 miles NW of Alternative 1
Mojave Station (Station 14)	1953 Highway 58 Mojave, CA 93501	Mojave	431	2- fire engines 1- 4x4 patrol 1- 4x4 fire engine	1- Captain 1- Engineer 1- Firefighter	2.4 miles East of Alternatives 2, 2a, and 3
Rosamond Station (Station 15)	3219 35th West Street Rosamond, CA 93560	Rosamond	248	2- fire engines 1- 4x4 patrol	1- Captain 1- Engineer 1- Firefighter	6.5 miles East of Alternatives 2, 2a, and 3

Source: KCFD website 2010; TRTP FEIS/EIR 2009

TABLE F-18. LACoFD FIRE STATIONS IN THE BRRTF FIRESHED

Battalion	Station Name and Number	Address	Area Served	Proximity to Closest BRRTF Component
Battalion 6	Fire Station #73	24875 N San Fernando Rd Newhall, 91321	Newhall	1.43 miles west of reconductoring area for BR-RIN Transmission Line
Battalion 6	Fire Station #104 (TEMP)	26201 Golden Valley Rd Santa Clarita, 91350	Santa Clarita	0.15 miles west of reconductoring area for BR-RIN Transmission Line
Battalion 6	Fire Station #111	26829 Seco Cyn Rd Saugus, 91350	Valencia	1.46 miles west of reconductoring area for BR-RIN Transmission Line
Battalion 6	Fire Station #126 - HDQTRS	26320 Citrus Street Santa Clarita, 91355	Santa Clarita	2.85 miles west of reconductoring area for BR-RIN Transmission Line
Battalion 6	Fire Station #149	31770 Ridge Route Castaic, 91384	Castaic	1.45 miles southwest of Alternative 1
Battalion 6	Fire Station # 156	24525 W. Copper Hill Dr. Santa Clarita, 91350	Valencia	0.2 miles southwest of reconductoring area for BR-RIN Transmission Line
Battalion 11	Fire Station #78	17021 N Elizabeth Lake Rd Palmdale, 93550	Palmdale	2.6 miles northeast of Alternative 1
Battalion 11	Fire Station #112 - CFF	8812 W Avenue E-8 Lancaster, 93535	Lancaster	20.72 miles east of Alternatives 2, 2a, and 3
Battalion 11	Fire Station #140 - CFF	8723 Elizabeth Lake Rd Leona Valley, 93550	Leona Valley	2.16 miles west of Alternative 3
Battalion 11	Fire Station #157 - CFF	15921 Spunky Canyon Rd Green Valley, 91350	Green Valley	0.55 miles southeast of Alternative 2
Battalion 17	Fire Station #81	8710 W Sierra Hwy Agua Dulce, 91350	Agua Dulce	1.13 miles southeast of Alternative 3

Sources: LACoFD website 2010; TRTP FEIS/EIR 2009

TABLE F-19. LACofD EQUIPMENT RESOURCES IN THE BRRTP FIRESHED

Equipment Type/Quantity
Helicopters/3
Airplanes/5
Dozers/10
Loaders/3
Motorgraders/4
Transports /8
Trailers/15
Heli-Tender/1
Fuel Tender/1

Sources: LACofD website 2010; BRRTP Wildfire and Fuels Technical Report 2010

TABLE F-20. ANF FIRE STATIONS IN THE BRRTP FIRESHED

Fire Station Name/ ID
Green Valley/ Station #14
Oak Flat/ Station #22
San Francisquito/ Station #26
Texas Canyon Work Center/ Station #27
Texas Canyon/ Station #28

Source: BRRTP Wildfire and Fuels Technical Report 2010

TABLE F-21. ANF EQUIPMENT RESOURCES IN THE BRRTP FIRESHED

Equipment Type/Quantity
Engines/5
Helicopter/1
Helitanker/1
Water tenders/2
Dozer/1
Airtankers/2

Source: BRRTP Wildfire and Fuels Technical Report 2010

TABLE F-22. SCHOOLS LOCATED WITHIN 0.25 MILES OF THE BR RTP.

School District	Areas Served	Existing or Planned Schools within 0.25 miles of BR RTP	Grade Level	BR RTP Component Within 0.25 Miles
Southern Kern USD	Kern County	None	K-12	None
Tehachapi USD	Kern County	None	K-12	None
Antelope Valley HSD	Unincorporated LA County, Lancaster, Palmdale	None	9-12	None
Eastside Union SD	Unincorporated LA County, Lancaster	None	K-8	None
Lancaster ESD	Unincorporated LA County, Lancaster	None	K-8	None
Westside Union ESD	Unincorporated LA County, Palmdale	Neenach Elementary (vacant); 1 planned school site	K-8	Alternative 1; Alternative 3
Palmdale ESD	Palmdale	None	K-8	None
Acton Agua-Dulce USD	Unincorporated LA County, Community of Acton	None	K-12	None
Newhall ESD	Unincorporated LA County, City of Santa Clarita	None	Pre-school and K-6	None
Saugus Union SD	Unincorporated LA County, City of Santa Clarita	Rosedale Elementary School; Canyon Vista Children's Academy	K-6	Reconductoring
Sulfur Springs Union ESD	Unincorporated LA County, City of Santa Clarita	None	K-6	None
William S. Hart Union HSD	Unincorporated LA County, City of Santa Clarita	None	9-12	Reconductoring

Sources: BR RTP Land Use Technical Report 2010; California Department of Education 2010.

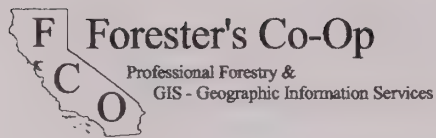
WILDFIRE RISK MODELS AND RESULT TABLES



FCO Fire Risk Assessment Model Key
 BR RTP April, 2011

Model 1/Criterion 1 (PFO): The presence of the project, as well as construction and maintenance activities, may compromise firefighter safety and create obstructions to fire suppression efforts.

<i>Pre-existing</i>		
1	Number of intersecting roads	> 1 road = 0 1 road = 1 No roads = 2
2	Percent of segment accessible by roads	0% = 3 25% = 2 50% = 1 > 50% = 0
3	Topography (heat convection as relates to safety and rate of spread and inaccessibility)	0-30% = 0 > 30% = 2
4	Number of parallel line ROWs	None exist = 0 1 - 2 = 2 > 2 = 3
5	Topographic exposure (ridge, valley, etc)	Ridge = 1 No ridge = 0
6	Wooden structure	Yes = 1 No = 0
7	Fuelbreak (> 100 ft wide)	No = 0 Yes = -1
8	Transmission bounded island (considering length and accessibility)	No = 0 Yes = 3 or 4 (judgment)
9	Intersection of a fire suppression boundary	0 = 0 1 = 1 2-3 = 2 4+ = 3
10	Intersection of a special land use zone FMU, Poppy Preserve, etc.	Yes = 1 No = 0
11	Existing overhead transmission: tower height proxy (kV data used) based on 50' height variation	115 kV or less = 1 230 kV or more = 2
<i>Project impacts</i>		
12	New intersecting roads	No new roads = 0 New 1 road = -1 New > 1 road = -2
13	Change in percent of segment accessible by roads	0% = 0 25% or 50% = -1 75% or 100% = -2
14	Increase in number of parallel line ROWs	0 = 0 (reconductoring only) Total is > 3 = 1



		Total is 3 = 2 New line = 7
15	Topographic exposure of new line (where a brand new ROW is established, not where it parallels existing)	Ridge = 1 No ridge = 0
16	Fuelbreak (> 100 ft) (where a brand new ROW is established, not where it parallels existing)	No = 0 Yes = -1
17	Creation of transmission bounded island (consider length and accessibility)	No = 0 Yes = 3 or 4 (judgment)
18	New intersection of a fire suppression boundary (due to increased ROW width)	Yes = 1 No = 0
19	New intersection of a special land use zone (due to increased ROW width) FMU, Poppy Preserve	Yes = 1 No = 0
20	Change in overhead transmission height based on 50 ft differential (based on kV)	New line = 2 Next to 115 or less (or triple circuit next to 230) = 1 Next to 230+ = 0

Model 2/Criterion 2 (PFW): The project construction and/or maintenance activities may adversely affect public safety through an increased risk of wildfire.

<i>Pre-existing</i>		
1	Overlap of a historic fire polygon—at least 60% of segment burned (past 50 years)	0 fires = 0 1 fire = 1 > 1 fires = 2
2	Fire boundary intersection (past 50 years) (main trend, don't count multiple lines)	0 = 0 Parallel = 1 Perpendicular = 2
3	Anthropogenic ignitions	0 = 0 1 = 1 > 1 = 2
4	Lightning ignitions	Yes = 1 No = 0
5	Number of intersecting roads	> 1 road = 1 1 road = 0.5 No roads = 0
6	Percent of segment accessible by roads	0% = 0 < 50% = 0.5 50+% = 1
7	Assets at risk - WUI homes, businesses, or infrastructure	No = 0 Yes = 3
8-10	Burn probability (average): Fuel ranking (Scott & Burgan) (0, 1, 2, 3) FRAP fire threat (0, 1, 2, 3, 4)	0-1.4 Low = 1 1.5-2.4 Moderate = 2 2.5-3.4 High = 3 > 3.5 Very High = 4
11	Topography	0-5 = 0 5-30% = 1 31-50% = 2 > 50% = 3
12	South or SW slope (160-290 deg)	Yes = 1 No = 0
13	Number of utility line ROWs	None exist = 0 1 - 2 = 1 > 2 = 2
14	kV as ignition potential (per line—add them up)	69 or 115 kV = 1 230 or 500 kV = 0.25
15	Wooden structure	No = 0 Yes = 1
<i>Project impacts</i>		
16	New intersecting roads	No new roads = 0 New 1 road = 1 New > 1 road = 2



17	Change in percent of segment accessible by roads	0% = 0 < 50% = 1 > 50% = 2
18	Increase in number of parallel line ROWs	0 = 0 (reconductoring only) Total is > 3 = 1 Total is 2 or 3 = 2 New line = 7
19	New kV ignitions (per new line)	69 or 115 kV = 1 230 or 500 kV = 0.25



Model 3/Criterion 3 (NVA): Activities associated with project construction and/or maintenance may result in native vegetation alteration due to the introduction of fire prone weeds and increase in potential for wildfire.

<i>Pre-existing</i>		
1	Fuel ranking (Scott & Burgan)	Null = 0 Shrub/tree = 1 Grass/grass shrub = 3
FRAP FRCC (Fire Regime and Condition Class):		
2	WHRDENSITY (canopy density)	3 = 0 and >0-24% 2 = 25-59% 1 = 60-100%
3	CON_CLASS (fire disturbance condition class)	1 (Fire regime within or near historical range. Risk of key ecosystem component loss low) = 0 9 (none assigned/non-wildlands) = 0 2 (Fire regime moderately altered from historical range. Risk of key ecosystem component loss high.) = 1 3 (Fire regime significantly altered from historical range. Risk of key ecosystem component loss high.) = 2
4	REGIME (frequency severity)	-28, -97, -98, -99 (urbanized, agriculture, water, barren/rock) = 0 5 (200+ year frequency, high severity) = 0 3 or 4 (35-100+ year frequency, mixed severity or 35-100+ year frequency high severity) = 1 1 or 2 (0-35 year fire frequency, low severity or 0-35 year frequency high severity) = 2
<i>Project impacts</i>		
6	Increase in number of parallel lines	0 = 0 (reconductoring only) Total is > 3 = 0.5 Total is 2 or 3 = 1 New line = 3
7	New intersecting roads*	No new roads = 0 New 1 road = -1 New > 1 road = -2
8	Change in percent of segment accessible by roads*	0% = 0 25% or 50% = -1 75% or 100% = -2



Index Categorization

Ranking	Model 1	Model 2	Model 3
Low	0-6	0-10	0-4.9
Moderate	7-9.9	10.1-14	5-6.9
High	10-13	14.1-18.5	7-7.9
Very High	13.1+	18.6+	8+

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FCO Fire Risk Assessment Model Key
BR RTP April, 2011

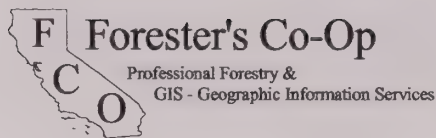
Model 1/Criterion 1 (PFO): The presence of the project, as well as construction and maintenance activities, may compromise firefighter safety and create obstructions to fire suppression efforts.

	<i>Pre-existing</i>
1	Number of intersecting roads
2	Percent of segment accessible by roads
3	Topography (heat convection as relates to safety and rate of spread and inaccessibility)
4	Number of parallel line ROWs
5	Topographic exposure (ridge, valley, etc)
6	Wooden structure
7	Fuelbreak (> 100 ft wide)
8	Transmission bounded island (considering length and accessibility)
9	Intersection of a fire suppression boundary
10	Intersection of a special land use zone FMU, Poppy Preserve, etc.
11	Existing overhead transmission: tower height proxy (kV data used) based on 50' height variation
	<i>Project impacts</i>
12	New intersecting roads
13	Change in percent of segment accessible by roads
14	Increase in number of parallel line ROWs
15	Topographic exposure of new line (where a brand new ROW is established, not where it parallels existing)
16	Fuelbreak (> 100 ft) (where a brand new ROW is established, not where it parallels existing)
17	Creation of transmission bounded island (consider length and accessibility)
18	New intersection of a fire suppression boundary (due to increased ROW width)
19	New intersection of a special land use zone (due to increased ROW width) FMU, Poppy Preserve
20	Change in overhead transmission height based on 50 ft differential (based on kV)

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Model 2/Criterion 2 (PFW): The project construction and/or maintenance activities may adversely affect public safety through an increased risk of wildfire.

	<i>Pre-existing</i>
1	Overlap of a historic fire polygon—at least 60% of segment burned (past 50 years)
2	Fire boundary intersection (past 50 years) (main trend, don't count multiple lines)
3	Anthropogenic ignitions
4	Lightning ignitions
5	Number of intersecting roads
6	Percent of segment accessible by roads
7	Assets at risk - WUI homes, businesses, or infrastructure
8-10	Burn probability (average): Fuel ranking (Scott & Burgan) (0, 1, 2, 3) FRAP fire threat (0, 1, 2, 3, 4)
11	Topography
12	South or SW slope (160-290 deg)
13	Number of utility line ROWs
14	kV as ignition potential (per line—add them up)
15	Wooden structure
	<i>Project impacts</i>
16	New intersecting roads
17	Change in percent of segment accessible by roads
18	Increase in number of parallel line ROWs
19	New kV ignitions (per new line)

Model 3/Criterion 3 (NVA): Activities associated with project construction and/or maintenance may result in native vegetation alteration due to the introduction of fire prone weeds and increase in potential for wildfire.

	<i>Pre-existing</i>
1	Fuel ranking (Scott & Burgan)
	FRAP FRCC (Fire Regime and Condition Class):
2	WHRDENSITY (canopy density)
3	CON CLASS (fire disturbance condition class)
4	REGIME (frequency severity)
	<i>Project impacts</i>
6	Increase in number of parallel lines
7	New intersecting roads
8	Change in percent of segment accessible by roads

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Model 1: PFO -

April 11, 2011 Segment #

Attribute #	1	2	3	4	5	21	22	23	24	25
1	1	0	0	0	1	0	0	0	0	0
2	2	1	2	0	1	1	1	2	1	1
3	0	0	0	0	2	2	2	2	1	2
4	0	0	0	2	3	3	3	3	3	3
5	0	0	0	0	1	1	1	1	1	1
6	0	0	0	1	0	0	0	0	0	0
7	0	0	0	0	1	-1	-1	-1	0	-1
8	0	0	0	0	4	4	4	4	4	4
9*	1	1	2	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0
11	0	0	0	1	2	2	2	2	2	2
Existing Total	4	2	4	4	8	12	12	13	12	12
12	0	0	0	0	0	0	0	0	-0.5	0
13	0	0	0	0	0	0	0	0	0	0
14	7	7	7	2	1	1	1	1	1	1
15	0	0	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0	0
17	0	0	0	3	0	0	0	0	0	0
18*	0	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0	0
20	2	2	2	1	0	0	0	0	0	0
Project Total	13	11	13	10	8	13	13	14	12.5	13

* Incomplete 2010 Fire Data

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Model 2/Criterion 2 (PFW): The project construction and/or maintenance activities may adversely affect public safety through an increased risk of wildfire.	
	<i>Pre-existing</i>
1	Overlap of a historic fire polygon—at least 60% of segment burned (past 50 years)
2	Fire boundary intersection (past 50 years) (main trend, don't count multiple lines)
3	Anthropogenic ignitions
4	Lightning ignitions
5	Number of intersecting roads
6	Percent of segment accessible by roads
7	Assets at risk - WUI homes, businesses, or infrastructure
8-10	Burn probability (average): Fuel ranking (Scott & Burgan) (0, 1, 2, 3) FRAP fire threat (0, 1, 2, 3, 4)
11	Topography
12	South or SW slope (160-290 deg)
13	Number of utility line ROWs
14	kV as ignition potential (per line—add them up)
15	Wooden structure
	<i>Project impacts</i>
16	New intersecting roads
17	Change in percent of segment accessible by roads
18	Increase in number of parallel line ROWs
19	New kV ignitions (per new line)

Model 3/Criterion 3 (NVA): Activities associated with project construction and/or maintenance may result in native vegetation alteration due to the introduction of fire prone weeds and increase in potential for wildfire.	
	<i>Pre-existing</i>
1	Fuel ranking (Scott & Burgan)
	FRAP FRCC (Fire Regime and Condition Class):
2	WHRDENSITY (canopy density)
3	CON CLASS (fire disturbance condition class)
4	REGIME (frequency severity)
	<i>Project impacts</i>
6	Increase in number of parallel lines
7	New intersecting roads
8	Change in percent of segment accessible by roads

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Model 1 PFO
Alternative 1

Model 1: PFO -
April 11, 2011 Segment #

Attribute #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1	1	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0
2	2	1	2	0	1	2	2	1	1	0	1	0	0	0	0	1	2	2	1	1	1	1	2	1	1
3	0	0	0	0	0	0	0	0	0	0	2	2	0	1	1	1	2	2	2	2	2	2	2	1	2
4	0	0	0	2	2	2	2	2	2	3	0	0	0	0	3	3	3	3	3	3	3	3	3	3	3
5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1
6	0	0	0	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1	-1	0	0	0	-1	-1	-1	-1	0	-1
8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	4	4	4	4	4	4	4	4	4
9*	1	1	2	0	2	1	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	1	1	1	1	1	1	1	0	0	0	0	2	2	2	2	2	2	2	2	2	2	2
Existing Total	4	2	4	4	8	8	7	6	5	5	3	2	1	2	10	11	14	15	14	13	12	12	13	12	12
12	0	0	0	0	0	0	0	0	0	0	-0.5	0	0	0	-0.5	0	0	0	0	0	0	0	0	-0.5	0
13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14	7	7	7	2	2	2	2	2	2	2	7	7	7	7	1	1	1	1	1	1	1	1	1	1	1
15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	3	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20	2	2	2	1	1	1	1	1	1	1	2	2	2	2	0	0	0	0	0	0	0	0	0	0	0
Project Total	13	11	13	10	11	11	10	9	8	11	11.5	11	10	11	10.5	12	15	16	15	14	13	13	14	12.5	13

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38	39	40	41	42	43	44	45	46	47	48	49	50
0	0	0	0	0	0	0	0	0	0	1	0	0
1	1	1	1	1	1	1	1	1	2	1	1	1
2	1	0	0	1	2	2	2	0	2	0	0	0
3	3	3	3	3	3	3	3	3	2	2	2	2
1	1	1	1	1	0	1	1	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
-1	0	0	-1	-1	0	0	0	0	0	0	0	0
4	4	3	0	4	4	4	0	0	0	0	0	0
3	3	3	3	3	3	3	3	3	1	0	2	2
0	0	0	0	0	0	0	0	0	0	0	0	0
2	2	2	2	2	2	2	2	2	0	0	2	2
15	15	13	9	14	15	16	12	9	7	4	7	7
0	0	0	0	0	0	-1	0	0	-0.5	-0.5	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
1	1	1	1	1	1	1	1	1	7	7	2	2
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	3	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	2	2	0	0
16	16	14	10	15	16	16	13	13	15.5	12.5	9	9

Model 1: PFO -
April 11, 2011

Attribute #	51	52	53	54
1	0	0	0	0
2	0	0	0	0
3	1	1	1	1
4	2	2	2	2
5	0	0	0	0
6	0	0	0	0
7	0	0	0	0
8	0	0	0	0
9*	2	2	2	0
10	0	0	0	0
11	2	2	2	2
Existing Total	7	7	7	5
12	0	0	0	0
13	0	0	0	0
14	2	2	2	2
15	0	0	0	0
16	0	0	0	0
17	0	0	0	0
18*	0	0	1	0
19	0	0	0	0
20	0	0	0	0
Project Total	9	9	10	7

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Note: The informatio

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Model 1 PFO
Alternative 1

Model 1: PFO -
April 11, 2011

Attribute #	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
2	2	2	1	0	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	2	1	1	1
3	2	2	2	2	2	2	2	1	1	0	0	1	2	1	0	0	1	2	2	2	0	2	0	0	0
4	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	2	2	2	2
5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	0	0	-1	-1	0	0	0	0	0	0	0	0
8	4	4	3	4	4	4	4	4	3	3	0	4	4	4	3	0	4	4	4	0	0	0	0	0	0
9*	0	0	0	1	2	2	3	2	1	2	2	3	3	3	3	3	3	3	3	3	3	1	0	2	2
10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	2	2
Existing Total	13	14	11	12	14	14	15	13	11	11	7	14	15	15	13	9	14	15	16	12	9	7	4	7	7
12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1	0	0	-0.5	-0.5	0	0
13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	7	7	2	2
15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0
18*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	0
Project Total	14	15	12	13	15	15	16	14	12	12	8	15	16	16	14	10	15	16	16	13	13	15.5	12.5	9	9

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Note: The informati

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Model 1 PFO
Alternative 1

Model 1: PFO -
April 11, 2011

Attribute #	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65
1	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0
2	0	0	0	0	0	2	1	1	1	1	1	0	1	0	1
3	1	1	1	1	0	2	2	1	1	1	2	1	2	2	2
4	2	2	2	2	2	2	2	2	2	2	2	2	2	3	3
5	0	0	0	0	0	1	1	0	1	1	1	0	1	1	1
6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	-1	-1	0	0	0	-1	-1
8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
9*	2	2	2	0	2	1	0	1	2	1	1	3	2	3	2
10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Existing Total	7	7	7	5	6	11	8	8	8	7	9	8	10	10	14
12	0	0	0	0	0	0	0	0	0	0	0	0	-0.5	-0.5	0
13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1
15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18*	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Project Total	9	9	10	7	8	13	10	10	10	9	11	10	11.5	11.5	15

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Note: The informati

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13	14	15	16	17	18	19	20	21	22	23	24	25
1	1	1	1	1	1	1	1	1	1	1	1	1
1	1	1	1	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0	1	0	0	0	2
0	0	0	0	0	0	0	0	0	0	0	0	0
1	1	1	1	1	0.5	0.5	0.5	1	1	1	1	1
1	1	1	1	0.5	0.5	1	1	1	1	0.5	1	1
0	0	0	0	0	0	0	0	0	0	0	0	0
2	2	2	2	2	2	2	2	2	2	2	2	2
3	3	3	3	4	4	4	4	4	4	4	4	4
2.5	2.5	2.5	2.5	3	3	3	3	3	3	3	3	3
3	3	3	3	3	3	3	3	3	3	3	3	3
1	2	2	2	2	3	3	2	2	3	3	2	2
0	1	1	0	1	1	1	1	1	0	1	1	1
0	0	3	3	3	3	3	3	3	3	3	3	3
0	0	0.75	1	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25
0	0	0	0	0	0	0	0	0	0	0	0	0
8	11	13.75	13	12.75	13.25	13.75	12.75	14.25	13.25	13.75	13.25	15.25
0	0	0.5	0	0	0	0	0	0	0	0	0.5	0
0	0	0	0	0	0	0	0	0	0	0	0	0
4	4	1	1	1	1	1	1	1	1	1	1	1
0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
12.25	15.25	15.5	14.25	14	14.5	15	14	15.5	14.5	15	15	16.5

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Model 2: PFW -
April 11, 2011

Attribute #	26	27	28	29	5	46	47	48	49	50
1*	1	1	1	1	2	2	2	2	2	2
2*	0	0	0	1	1	2	1	0	1	1
3*	0	0	1	0	2	2	2	0	0	0
4*	0	0	0	0	0	0	0	0	0	0
5	1	0.5	1	1	1	1	1	0.5	1	1
6	0.5	0.5	1	1	1	1	0.5	1	1	1
7	0	0	3	0	3	3	0	0	0	0
8	2	3	2	2	2	2	2	1	2	1
9	4	4	4	4	3	3	3	3	3	3
Average of 8-9	3	3.5	3	3	5	2.5	2.5	2	2.5	2
Score of 8-9: 10	3	4	3	3	3	3	3	2	3	2
11	3	2	2	3	2	2	2	1	1	1
12	1	0	1	1	1	1	0	1	1	1
13	3	3	3	3	3	3	2	2	2	2
14	1.25	1.25	1.25	1.25	5	1.75	0.5	0.5	0.5	0.5
15	0	0	0	0	0	0	0	0	0	0
Existing Total	13.75	12.25	17.25	15.25	5	21.75	14	10	12.5	11.5
16	0	0	0	0	0	0	0.5	0.5	0	0
17	0	0	0	0	0	0	0	0	0	0
18	1	1	1	1	1	1	4	4	2	2
19	0.25	0.25	0.25	0.25	5	0.25	0.25	0.25	0.25	0.25
Project Total	15	13.5	18.5	16.5	2	23	18.75	14.75	14.75	13.75

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Note: The information

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Model 2 PFW
Alternative 1

Model 2: PFW -
April 11, 2011 Segment #

Attribute #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1*	1	1	1	0	1	1	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1
2*	1	2	2	0	1	1	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0
3*	2	0	0	0	0	0	0	1	1	1	0	0	0	1	0	0	0	0	0	0	1	0	0	0	2
4*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	0.5	1	1	1	0.5	0.5	0.5	0.5	1	1	1	1	1	1	1	1	1	0.5	0.5	0.5	1	1	1	1	1
6	0.5	1	0.5	1	1	0.5	0.5	1	1	1	1	1	1	1	1	1	0.5	0.5	1	1	1	1	0.5	1	1
7	0	0	0	0	0	0	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	1	1	1	2	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
9	1	2	2	2	1	1	1	1	1	2	3	3	3	3	3	3	4	4	4	4	4	4	4	4	4
Average of 8-9	1	1.5	1.5	2	1	1	1	1	1.5	2	2.5	2.5	2.5	2.5	2.5	2.5	3	3	3	3	3	3	3	3	3
Score of 8-9: 10	1	2	2	2	1	1	1	1	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
11	0	0	1	1	1	0	1	1	1	1	2	2	1	2	2	2	2	3	3	2	2	3	3	2	2
12	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	1	1	1	1	0	1	1	1
13	0	0	0	2	2	2	2	2	2	3	0	0	0	0	3	3	3	3	3	3	3	3	3	3	3
14	0	0	0	1	1	1	1	1	1	1	0	0	0	0	0.75	1	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25
15	0	0	0	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Total	6	7	7.5	9	9.5	8	7	8.5	10	14	10	7	8	11	13.75	13	12.75	13.25	13.75	12.75	14.25	13.25	13.75	13.25	15.25
16	0	0	0	0	0	0	0	0	0	0	0.5	0	0	0	0.5	0	0	0	0	0	0	0	0	0.5	0
17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18	4	4	4	2	2	2	2	2	2	2	4	4	4	4	1	1	1	1	1	1	1	1	1	1	1
19	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Project Total	10.25	11.25	11.75	11.25	11.75	10.25	9.25	10.75	12.25	16.25	14.75	11.25	12.25	15.25	15.5	14.25	14	14.5	15	14	15.5	14.5	15	15	16.5

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Model 2 PFW
Alternative 1

Model 2: PFW -
April 11, 2011

Attribute #	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	.
1*	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
2*	0	0	0	1	2	2	2	2	1	1	1	1	1	1	2	2	2	2	2	1	2	1	0	1	1	
3*	0	0	1	0	1	2	1	1	2	2	1	2	1	2	2	2	2	2	2	2	2	2	0	0	0	
4*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
5	1	0.5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.5	1	1	
6	0.5	0.5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.5	1	1	1	
7	0	0	3	0	0	0	0	3	0	0	0	0	0	3	3	3	3	0	0	3	3	0	0	0	0	
8	2	3	2	2	2	2	2	2	2	2	2	2	2	1	1	2	2	2	2	2	2	2	1	2	1	
9	4	4	4	4	4	3	3	3	3	3	3	3	3	3	2	3	3	3	3	3	3	3	3	3	3	
Average of 8-9	3	3.5	3	3	3	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2	1.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2	2.5	2	
Score of 8-9: 10	3	4	3	3	3	3	3	3	3	3	3	3	3	2	2	3	3	3	3	3	3	3	2	3	2	
11	3	2	2	3	2	3	3	2	2	1	1	2	2	2	1	1	2	2	2	2	2	2	1	1	1	
12	1	0	1	1	0	0	1	1	1	1	1	0	0	1	1	1	0	1	1	1	1	0	1	1	1	
13	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	2	2	2	2	
14	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	0.75	0.75	0.75	0.75	0.75	1.75	1.75	1.75	1.75	1.75	1.75	0.5	0.5	0.5	0.5	
15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Existing Total -	13.75	12.25	17.25	15.25	16.25	18.25	18.25	20.25	17.25	16.25	14.75	15.75	14.75	18.75	18.75	20.75	20.75	18.75	18.75	20.75	21.75	14	10	12.5	11.5	
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0.5	0.5	0	0	
17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
18	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	4	4	2	2	
19	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	
Project Total -	15	13.5	18.5	16.5	17.5	19.5	19.5	21.5	18.5	17.5	16	17	16	20	20	22	22	20	21	22	23	18.75	14.75	14.75	13.75	

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Note: The information

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63	64	65
2	2	2
2	2	1
2	0	0
0	0	0
1	1	1
1	1	1
0	0	0
1	1	1
3	3	3
2	2	2
2	2	2
2	2	2
1	1	1
2	3	3
0.5	2	1.5
0	0	0
15.5	16	14.5
0.5	0.5	0
0	0	0
2	2	1
0.25	0.25	0.25
18.25	18.75	15.75

Model 3: NVA -

April 11, 2011 Segment #

Attribute #	1	2	3	4	21	22	23	24	25
1	3	3	3	2	2	2	2	2	1
2	3	2	2	3	1	1	1	1	1
3	0	0	0	0	1	1	1	1	1
4	2	2	2	2	1	1	1	1	1
Existing Total	8	7	7	7	5	5	5	5	4
5	3	3	3	1	0.5	0.5	0.5	0.5	0.5
6	0	0	0	0	0	0	0	0.5	0
7	0	0	0	0	0	0	0	0	0
Project Total	11	10	10	8	5.5	5.5	5.5	6	4.5

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Model 2: PFW -
April 11, 2011

Attribute #	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65
1*	2	2	2	0	2	2	1	2	2	1	1	2	2	2	2
2*	2	2	2	0	2	2	0	2	2	2	1	2	2	2	1
3*	0	1	2	1	0	0	0	0	0	1	0	0	2	0	0
4*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	1	1	1	1	1	0.5	1	0.5	1	1	1	1	1	1	1
6	1	1	1	1	1	0.5	1	1	1	1	1	1	1	1	1
7	3	3	3	3	0	0	0	0	0	0	3	3	0	0	0
8	2	2	1	1	2	2	2	2	2	1	1	1	1	1	1
9	3	3	2	2	3	4	4	4	4	4	3	3	3	3	3
Average of 8-9	2.5	2.5	1.5	1.5	2.5	3	3	3	3	2.5	2	2	2	2	2
Score of 8-9: 10	3	3	2	2	3	3	3	3	3	3	2	2	2	2	2
11	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2
12	0	0	0	1	1	1	1	1	0	0	0	1	1	1	1
13	2	2	2	2	2	2	2	2	2	2	2	2	2	3	3
14	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	2	1.5
15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Total	16.5	17.5	17.5	13.5	14.5	13.5	11.5	14	13.5	13.5	13.5	15.5	15.5	16	14.5
16	0	0	0	0	0	0	0	0	0	0	0	0	0.5	0.5	0
17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1
19	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Project Total	18.75	19.75	19.75	15.75	16.75	15.75	13.75	16.25	15.75	15.75	15.75	17.75	18.25	18.75	15.75

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Note: The information

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Model 3 NVA
Alternative 1

Model 3: NVA -
April 11, 2011 Segment #

Attribute #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1	3	3	3	2	3	3	3	3	2	2	2	1	1	1	1	1	1	1	2	2	2	2	2	2	1
2	3	2	2	3	3	3	3	3	3	2	2	2	3	3	1	1	1	1	1	1	1	1	1	1	1
3	0	0	0	0	0	0	0	0	0	2	1	1	1	0	2	2	2	2	2	1	1	1	1	1	1
4	2	2	2	2	2	2	2	2	2	1	1	1	2	2	1	1	1	1	1	1	1	1	1	1	1
Existing Total	8	7	7	7	8	8	8	8	7	7	6	5	7	6	5	5	5	5	6	5	5	5	5	5	4
5	3	3	3	1	1	1	1	1	1	1	3	3	3	3	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
6	0	0	0	0	0	0	0	0	0	0	0.5	0	0	0	0.5	0	0	0	0	0	0	0	0	0.5	0
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Project Total	11	10	10	8	9	9	9	9	8	8	9.5	8	10	9	6	5.5	5.5	5.5	6.5	5.5	5.5	5.5	5.5	6	4.5

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38	39	40	41	42	43	44	45	46	47	48	49	50
3	3	3	3	3	2	3	3	3	3	3	3	3
2	2	2	1	1	1	1	3	3	3	3	3	2
1	1	1	1	1	1	1	2	2	2	2	2	1
1	1	1	1	1	1	1	1	1	1	1	1	2
7	7	7	6	6	5	6	9	9	9	9	9	8
0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	3	3	1	1
0	0	0	0	0	0	1	0	0	0.5	0.5	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
7.5	7.5	7.5	6.5	6.5	5.5	7.5	9.5	9.5	12.5	12.5	10	9

Model 3: NVA -

April 11, 2011

Attribute #	51	52	53	54
1	3	3	3	3
2	1	2	2	2
3	2	1	1	1
4	1	1	1	1
Existing Total	7	7	7	7
5	1	1	1	1
6	0	0	0	0
7	0	0	0	0
Project Total	8	8	8	8

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Note: The informati

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Model 3 NVA
Alternative 1

Model 3: NVA -
April 11, 2011

Attribute #	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
1	2	2	1	1	2	3	3	3	3	2	3	3	3	3	3	3	3	2	3	3	3	3	3	3	3
2	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	1	1	1	1	3	3	3	3	3	2
3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	1
4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2
Existing Total	5	5	4	4	5	6	6	6	6	5	6	6	7	7	7	6	6	5	6	9	9	9	9	9	8
5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	3	3	1	1
6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0.5	0.5	0	0
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Project Total	5.5	5.5	4.5	4.5	5.5	6.5	6.5	6.5	6.5	5.5	6.5	6.5	7.5	7.5	7.5	6.5	6.5	5.5	7.5	9.5	9.5	12.5	12.5	10	9

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Note: The informati

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Model 3 NVA
Alternative 1

Model 3: NVA -
April 11, 2011

Attribute #	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65
1	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
2	1	2	2	2	1	1	1	1	1	1	1	1	1	1	1
3	2	1	1	1	1	1	2	2	1	1	2	1	1	1	1
4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Existing Total	7	7	7	7	6	6	7	7	6	6	7	6	6	6	6
5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.5
6	0	0	0	0	0	0	0	0	0	0	0	0	0.5	0.5	0
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Project Total	8	8	8	8	7	7	8	8	7	7	8	7	7.5	7.5	6.5

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Note: The informati

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15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0	1	1	0	0	1	0	0	0	0	0	0	1	0	0
0	0	0	0	0	0	2	2	0	0	0	2	2	2	2	2
2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
0	0	0	0	0	0	1	1	0	0	0	0	1	1	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	-1	-1	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	1	1	0	0	2	2	1	1	1	0	0	1	1	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
5	5	6	6	4	4	10	9	5	5	5	5	6	9	7	6
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	2	2	2	2	2	2	2	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
7	7	8	8	6	6	12	11	6	6	6	6	7	10	8	7

Model 1: PFO -
April 11, 2011

Attribute #	31	32	33	34	35	54	55
1	0	1	0	0	0	0	0
2	0	1	0	0	1	0	0
3	2	2	2	2	2	2	2
4	2	2	2	2	2	3	3
5	0	1	0	0	1	1	0
6	0	0	0	0	0	0	0
7	0	0	0	0	-1	-1	-1
8	0	0	0	0	4	4	4
9*	0	1	2	1	1	3	2
10	0	0	0	0	0	0	0
11	2	2	2	2	2	2	2
Existing Total	6	10	8	7	12	14	12
12	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0
14	0	0	0	0	0	1	1
15	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0
18*	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0
20	1	1	1	1	1	1	1
Project Total	7	11	9	8	13	16	14

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Note: The informa

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Model 1: PFO -

April 11, 2011 Segment #

Attribute #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	
1	0	1	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2	1	2	1	2	2	2	1	1	2	1	0	0	0	1	1	0	1	1	0	0	1	0	0	0	0	0	0	1	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	2	2	2	2	2	2
4	3	3	3	3	3	3	3	3	3	3	3	3	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1	1	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1	-1	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	2	2	1	1	1	0	0	1	1	0	0
10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Existing Total	6	8	6	8	8	8	7	6	7	6	5	9	9	5	5	5	6	6	4	4	10	9	5	5	5	5	6	9	7	6	6
12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1
Project Total	7	9	7	9	9	9	8	7	8	7	6	10	10	7	7	7	8	8	6	6	12	11	6	6	6	6	7	10	8	7	7

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Model 1 PFO
Alternative 2

Model 1: PFO -
April 11, 2011

Attribute #	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55
1	0	1	0	0	0	0	0	0	0	0	1	0	0	1	0	1	1	0	0	0	0	0	0	0	0
2	0	1	0	0	1	0	0	0	1	0	2	1	1	2	1	2	1	1	0	1	1	0	0	0	0
3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	0	0	2	2	2	0	0	2	2
4	2	2	2	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
5	0	1	0	0	1	1	1	1	1	1	0	1	0	1	0	0	0	0	1	1	1	0	0	1	0
6	0	0	0	0	0	0	0	0	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	-1	0	0	0	-1	-1	0	-1	0	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
8	0	0	0	0	4	4	3	4	4	3	0	0	4	0	0	0	0	3	4	0	0	0	0	4	4
9*	0	1	2	1	1	2	3	2	2	1	0	1	2	2	2	1	2	3	3	3	3	3	3	3	2
10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Existing Total	6	10	8	7	12	14	14	14	15	12	11	10	15	12	7	8	8	11	14	11	11	7	7	14	12
12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.5	-0.5	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	1	1	1
15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0
18*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
Project Total	7	11	9	8	13	15	15	15	16	13	12	11	19	16	8	9	9	11.5	14.5	11	11	7	9	16	14

Note: The informa

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15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
0	1	1	1	0	0	2	2	1	1	1	1	1	1	1
0	1	2	1	0	0	1	1	2	2	1	0	0	2	2
0	0	0	0	0	0	2	2	1	1	2	2	0	0	2
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
3	3	0	0	0	0	0	3	3	3	3	0	3	0	3
0	2	1	1	1	1	2	2	2	2	2	2	2	2	2
0	1	0	0	1	1	2	2	1	2	3	3	3	3	4
0	1.5	0.5	0.5	1	1	2	2	1.5	2	2.5	2.5	2.5	2.5	3
0	2	1	1	1	1	2	2	2	2	3	3	3	3	3
0	0	0	0	0	1	2	2	1	1	1	2	3	2	2
0	0	0	0	0	0	0	1	1	1	0	0	1	1	1
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6.5	10.5	7.5	6.5	4.5	5.5	12.5	16.5	14.5	14.5	14.5	11.5	14.5	12.5	17.5
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	2	2	2	2	2	2	2	0	0	0	0	0	0	0
0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0	0	0	0	0	0	0
8.75	12.75	9.75	8.75	6.75	7.75	14.75	18.75	14.5	14.5	14.5	11.5	14.5	12.5	17.5

Model 2: PFW -
April 11, 2011

Attribute #	30	31	32	33	34	52	53	54	55
1*	0	0	1	2	1	2	2	2	2
2*	0	0	1	2	2	1	2	1	1
3*	2	1	2	2	2	1	0	0	1
4*	0	0	0	0	0	0	0	0	0
5	1	1	0.5	1	1	1	1	1	1
6	1	1	1	1	1	1	1	1	1
7	3	3	3	3	0	0	0	0	0
8	2	2	2	1	1	1	1	1	1
9	3	3	4	3	3	3	3	3	3
Average of 8-9	2.5	2.5	3	2	2	2	2	2	2
Score of 8-9: 10	3	3	3	2	2	2	2	2	2
11	2	2	2	1	2	1	2	2	2
12	1	1	1	1	1	1	0	1	1
13	1	1	1	1	1	2	2	2	2
14	0.5	0.5	0.5	0.5	0.5	1.5	1.5	2	1.5
15	0	0	0	0	0	0	0	0	0
Existing Total	14.5	13.5	16	16.5	13.5	13.5	13.5	14	14.5
16	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	1	1	1
19	0	0	0	0	0	0	0	0.25	0.25
Project Total	14.5	13.5	16	16.5	13.5	13.5	14.5	15.25	15.75

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Model 2 PFW
Alternative 2

Model 2: PFW - April 11, 2011 Segment #																													
Attribute #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
1*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	2	2	1	1	1	1	1	1	1
2*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	1	0	0	1	1	2	2	1	0	0	2	2
3*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	1	1	2	2	0	0	2
4*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	1	0.5	1	0.5	0.5	0.5	0.5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
6	1	0.5	1	0.5	0.5	0.5	1	1	0.5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	0	0	0	0	0	3	3	3	3	0	3	0	3
8	2	2	2	2	2	2	1	1	1	1	1	1	1	1	0	2	1	1	1	1	2	2	2	2	2	2	2	2	2
9	1	1	0	0	0	0	0	1	1	1	0	0	0	0	0	1	0	0	1	1	2	2	1	2	3	3	3	3	4
Average of 8-9	1.5	1.5	1	1	1	1	0.5	1	1	1	0.5	0.5	0.5	0.5	0	1.5	0.5	0.5	1	1	2	2	1.5	2	2.5	2.5	2.5	2.5	3
Score of 8-9: 10	2	2	1	1	1	1	1	1	1	1	1	1	1	1	0	2	1	1	1	1	2	2	2	2	3	3	3	3	3
11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	2	1	1	1	2	3	2	2
12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	1	1	1
13	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
14	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	1.25	1.5	0.75	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Total -	6.75	5.75	5.75	4.75	4.75	4.75	5.25	5.75	5.25	5.75	6.25	6.5	5.75	4.5	6.5	10.5	7.5	6.5	4.5	5.5	12.5	16.5	14.5	14.5	14.5	11.5	14.5	12.5	17.5
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	0	0	0	0	0	0	0
19	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0	0	0	0	0	0	0
Project Total -	8	7	7	6	6	6	6.5	7	6.5	7	7.5	7.75	7	6.75	8.75	12.75	9.75	8.75	6.75	7.75	14.75	18.75	14.5	14.5	14.5	11.5	14.5	12.5	17.5

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Model 2 PFW
Alternative 2

Model 2: PFW -
April 11, 2011

Attribute #	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55
1*	0	0	1	2	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
2*	0	0	1	2	2	1	1	2	1	1	2	1	2	1	1	1	2	1	1	2	1	2	1	2	1	1
3*	2	1	2	2	2	0	0	0	1	2	0	0	0	1	1	2	0	2	0	1	1	0	1	0	0	1
4*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	1	1	0.5	1	1	1	1	1	1	1	1	0.5	1	1	0.5	1	0.5	0.5	1	1	1	1	1	1	1	1
6	1	1	1	1	1	1	1	1	1	1	1	0.5	1	1	0.5	1	0.5	1	1	1	1	1	1	1	1	1
7	3	3	3	3	0	0	3	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	2	2	2	1	1	2	2	1	1	1	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1
9	3	3	4	3	3	3	3	3	3	3	3	3	3	4	4	3	3	3	3	3	3	3	3	3	3	3
Average of 8-9	2.5	2.5	3	2	2	2.5	2.5	2	2	2	2.5	2.5	2.5	3	3	2	2	2	2	2	2	2	2	2	2	2
Score of 8-9: 10	3	3	3	2	2	3	3	2	2	2	3	3	3	3	3	2	2	2	2	2	2	2	2	2	2	2
11	2	2	2	1	2	2	3	2	2	3	3	2	2	2	2	1	1	1	2	2	2	2	1	2	2	2
12	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	0	1	1
13	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
14	0.5	0.5	0.5	0.5	0.5	0.75	1	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	2.5	2.5	1.5	1.5	1.5	2	1.5
15	0	0	0	0	0	0	0	0	0	1	1	1	1	1	0	0	0	0	0	0	1	0	0	0	0	0
Existing Total -	14.5	13.5	16	16.5	13.5	10.75	18	17.5	17.5	17.5	17.5	14.5	16.5	16.5	14.5	13.5	12.5	14	13.5	16.5	16.5	14.5	13.5	13.5	14	14.5
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.5	0.5	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	1	1	1
19	0	0	0	0	0	0	0	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0	0	0	0.25	0.25
Project Total -	14.5	13.5	16	16.5	13.5	10.75	18	18.75	18.75	18.75	18.75	15.75	17.75	17.75	15.75	14.75	13.75	15.25	15.25	18.25	16.75	14.5	13.5	14.5	15.25	15.75

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13	14	15	16	17	18	19	20	21	22	23	24	25
3	3	0	2	3	3	2	3	3	2	1	1	1
3	3	0	1	3	3	1	1	1	1	2	2	1
0	0	0	2	0	0	2	2	0	1	1	1	2
0	0	0	1	0	0	1	1	1	1	1	1	1
6	6	0	6	6	6	6	7	5	5	5	5	5
0.5	1	0	1	1	1	1	1	1	1	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
6.5	7	0	7	7	7	7	8	6	6	5	5	5

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Model 3: NVA -
April 11, 2011

Attribute #	26	27	28	29	46	47	48	49	50
1	1	1	1	1	3	3	3	3	3
2	1	1	1	1	2	2	1	1	1
3	1	1	1	1	1	1	1	1	1
4	1	1	1	1	2	2	1	1	1
Existing Total	4	4	4	4	8	8	6	6	6
5	0	0	0	0	0.5	0.5	0.5	0.5	0
6	0	0	0	0	0	0	0.5	0.5	0
7	0	0	0	0	0	0	0	0	0
Project Total	4	4	4	4	8.5	8.5	7	7	6

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Model 3 NVA
Alternative 2

Model 3: NVA -

April 11, 2011 Segment #

Attribute #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1	2	1	1	1	1	1	2	2	2	3	3	3	3	3	0	2	3	3	2	3	3	2	1	1	1
2	3	3	3	3	3	3	3	1	1	1	3	3	3	3	0	1	3	3	1	1	1	1	2	2	1
3	0	0	0	0	0	0	0	2	2	2	0	0	0	0	0	2	0	0	2	2	0	1	1	1	2
4	1	1	0	0	0	0	0	1	1	1	0	0	0	0	0	1	0	0	1	1	1	1	1	1	1
Existing Total	6	5	4	4	4	4	5	6	6	7	6	6	6	6	0	6	6	6	6	7	5	5	5	5	5
5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	1	0	1	1	1	1	1	1	1	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Project Total	6.5	5.5	4.5	4.5	4.5	4.5	5.5	6.5	6.5	7.5	6.5	6.5	6.5	7	0	7	7	7	7	8	6	6	5	5	5

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Model 3 NVA
Alternative 2

Model 3: NVA - April 11, 2011																									
Attribute #	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
1	1	1	1	1	2	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
2	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	1	1	1
3	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	1	1	1
Existing Total	4	4	4	4	5	5	5	6	6	6	6	6	6	6	6	6	6	6	6	7	8	8	6	6	6
5	0	0	0	0	0	0	0	0	0	0	0	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0
6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.5	0.5	0
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Project Total	4	4	4	4	5	5	5	6	6	6	6	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	7.5	8.5	8.5	7	7	6

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Model 1: PFO -

April 11, 2011 Segment #

Attribute #	1	2	3
1	0	0	1
2	0	1	2
3	0	0	0
4	2	0	0
5	0	0	0
6	0	0	0
7	0	0	0
8	0	0	0
9*	1	0	0
10	0	0	0
11	2	0	0
Existing Total	5	1	3
12	0	0	0
13	0	0	0
14	1	7	7
15	0	1	1
16	0	0	0
17	0	0	0
18*	0	0	0
19	0	0	0
20		2	2
Project Total	6	11	13

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Model 3: NVA -
April 11, 2011

Attribute #	51	52	53	54	55
1	3	3	3	3	3
2	1	1	1	1	1
3	1	1	1	2	2
4	1	1	1	1	1
Existing Total	6	6	6	7	7
5	0	0	0.5	0.5	0.5
6	0	0	0	0	0
7	0	0	0	0	0
Project Total	6	6	6.5	7.5	7.5

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Model 1 PFO
Alternative 2a

Model 1: PFO -
April 11, 2011

Segment #														
Attribute #	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	0	0	1	0	0	0	0	1	1	1	2	0	1	0
2	0	1	2	1	1	1	1	2	2	2	3	1	0	1
3	0	0	0	2	2	2	2	2	2	2	2	2	0	2
4	2	0	0	0	0	0	0	0	0	0	0	0	0	2
5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	-1	-1	-1	-1	-1	-1	-1	0	0	0	-1
8	0	0	0	0	0	0	0	0	0	0	0	0	0	4
9*	1	0	0	1	0	0	0	0	0	0	0	0	0	1
10	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11	2	0	0	0	0	0	0	0	0	0	0	0	0	2
Existing Total	5	1	3	3	2	2	2	4	4	4	7	3	1	11
12	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14	1	7	7	7	7	7	7	7	7	7	7	7	7	1
15	0	1	1	1	1	1	1	1	1	1	1	1	0	0
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18*	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20		2	2	2	2	2	2	2	2	2	2	2	2	
Project Total	6	11	13	13	12	12	12	14	14	14	17	13	10	12

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10	11	12	13	14
0	0	0	0	1
0	0	0	0	1
1	1	0	2	0
1	0	0	0	0
0.5	0	1	0.5	1
0.5	0	1	1	1
0	0	0	0	0
2	2	2	2	2
4	4	4	4	4
3	3	3	3	3
3	3	3	3	3
3	2	2	1	2
1	0	0	1	0
0	0	0	0	2
0	0	0	0	1
0	0	0	0	0
10	6	7	8.5	12
0	0	0	0	0
0	0	0	0	0
4	4	4	4	1
0.5	0.5	0.5	0.5	0
14.5	10.5	11.5	13	13

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Model 3: NVA -

April 11, 2011

		Segment #		
Attribute #		1	2	3
	1	1	1	1
	2	1	1	1
	3	2	1	1
	4	1	1	1
Existing Total		5	4	4
	5	0.5	3	3
	6	0	0	0
	7	0	0	0
Project Total		5.5	7	7

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Model 2 PFW
Alternative 2a

Model 2: PFW -
April 11, 2011

Segment #															
Attribute #		1	2	3	4	5	6	7	8	9	10	11	12	13	14
1*	1	1	1	1	1	0	0	0	0	0	0	0	0	0	1
2*	1	0	0	2	0	0	0	0	0	0	0	0	0	0	1
3*	2	1	0	1	0	1	0	0	0	0	1	1	0	2	0
4*	0	0	0	0	1	0	0	1	0	0	1	0	0	0	0
5	1	1	0.5	1	1	1	1	1	0.5	0.5	0.5	0	1	0.5	1
6	1	1	0.5	1	1	1	1	1	0.5	0.5	0.5	0	1	1	1
7	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	2	2	2	3	3	3	3	2	2	2	2	2	2	2	2
9	3	3	3	4	4	4	4	4	4	4	4	4	4	4	4
	2.5	2.5	2.5	3.5	3.5	3.5	3	3	3	3	3	3	3	3	3
10	3	3	3	4	4	4	4	3	3	3	3	3	3	3	3
11	1	1	2	2	2	2	2	3	2	2	3	2	2	1	2
12	0	0	0	1	1	1	1	1	0	0	1	0	0	1	0
13	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2
14	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Total	16	8	7	13	10	10	10	10	6	6	10	6	7	8.5	12
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18	1	4	4	4	4	4	4	4	4	4	4	4	4	4	1
19	0	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0
Project Total	17	12.5	11.5	17.5	14.5	14.5	14.5	10.5	10.5	14.5	10.5	11.5	13	13	

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Model 3 NVA
Alternative 2a

Model 3: NVA -
April 11, 2011

Segment #															
Attribute #		1	2	3	4	5	6	7	8	9	10	11	12	13	14
	1	1	1	1	1	1	1	1	1	1	2	1	1	2	3
	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	3	2	1	1	1	1	1	1	1	1	1	1	1	1	1
	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Existing Total		5	4	4	4	4	4	4	4	4	5	4	4	5	6
	5	0.5	3	3	3	3	3	3	3	3	3	3	3	3	0.5
	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Project Total		5.5	7	7	7	7	7	7	7	7	8	7	7	8	6.5

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13	14	15	16	17	18	19	20	21	22	23	24	25
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
3	3	3	3	3	3	3	3	3	3	3	3	3
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	1	1	1	1	1	1	1	1	1	1	1
0	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	3	4	0	3	3	0	3	3	3
2	0	2	1	1	1	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
2	2	2	2	2	2	2	2	2	2	2	2	2
11	5	8	7	10	11	6	9	9	6	9	9	9
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
1	1	1	1	1	1	1	1	1	1	1	1	1
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
12	6	9	8	11	12	7	10	10	7	10	10	10

of Forester's Co-Op.

Model 1: PFO - April
11, 2011

Attribute #	26	27	28	29	30	46	47	48	49	50
1	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	1	0	0	2	1	1
3	0	0	0	0	2	2	2	2	2	1
4	3	3	3	3	3	2	2	2	2	2
5	0	0	0	0	1	1	1	1	1	1
6	1	1	1	1	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0
9*	0	0	0	0	0	0	1	1	1	1
10	0	0	0	0	0	0	0	0	0	0
11	2	2	2	2	2	2	2	2	2	2
Existing Total	6	6	6	6	9	7	8	10	9	8
12	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0
14	1	1	1	1	1	2	2	2	2	2
15	0	0	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0
18*	0	0	1	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0
Project Total	7	7	8	7	0	9	10	12	11	10

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Note: The information

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Model 1: PFO - April

11, 2011 Segment #																									
Attribute #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1	0	1	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	1	2	1	2	2	2	1	1	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	4	4	0	0	0	3	4	0	3	3	0	3	3	3
9*	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	1	1	1	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Existing Total	6	8	6	8	8	8	7	6	7	6	5	9	11	5	8	7	10	11	6	9	9	6	9	9	9
12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Project Total	7	9	7	9	9	9	8	7	8	7	6	10	12	6	9	8	11	12	7	10	10	7	10	10	10

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Model 1 PFO
Alternative 3

Model 1: PFO - April
11, 2011

Attribute #	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0
2	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1	1	2	2	1	0	0	2	1	1
3	0	0	0	0	2	2	1	2	1	0	1	0	0	0	0	0	2	2	2	2	2	2	2	2	1
4	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	2	2	2	2	2
5	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	1	1	1	1	1	1	1	1	1	1
6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	3	3	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0
9*	0	0	0	0	0	2	3	3	0	1	1	0	1	1	3	2	0	2	0	0	0	1	1	1	1
10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2
Existing Total	6	6	6	6	9	15	15	12	8	8	9	7	7	7	11	8	10	13	11	9	7	8	10	9	8
12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.5	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	1	1	1	2	2	2	2	2
15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18*	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0
Project Total	7	7	8	7	10	16	16	13	9	9	10	8	8	8	13	11	11	14	11.5	10	9	10	12	11	10

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Note: The information

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63	64	65	66	67	68	69	70	71	72	73	74	75
0	0	0	0	0	0	1	0	0	0	0	0	0
0	0	1	1	1	2	2	1	1	1	0	0	1
2	1	2	2	2	2	1	1	1	0	2	0	0
2	2	2	2	2	2	2	2	2	2	2	3	3
1	1	1	1	1	1	1	1	1	1	1	1	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
3	2	2	3	0	2	0	0	3	3	2	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
2	2	2	2	2	2	2	2	2	2	2	2	2
10	8	10	11	8	11	9	7	10	9	9	6	6
0	0	0	0	-0.5	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
2	2	2	2	2	2	2	2	2	2	2	2	1
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
12	10	12	13	9.5	13	11	9	12	11	11	8	7

Model 1: PFO - April
11, 2011

Attribute #	76	77	78	79
1	0	0	0	0
2	1	0	0	0
3	0	0	0	1
4	3	3	3	3
5	0	0	0	1
6	0	0	0	0
7	0	0	0	0
8	0	0	0	0
9*	1	3	3	1
10	0	0	0	0
11	2	2	2	2
Existing Total	7	8	8	8
12	0	-0.5	-0.5	0
13	0	0	0	0
14	1	1	1	1
15	0	0	0	0
16	0	0	0	0
17	0	0	0	0
18*	0	0	0	0
19	0	0	0	0
20	0	0	0	0
Project Total	8	8.5	8.5	9

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Note: The information

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Model 1 PFO
Alternative 3

Model 1: PFO - April
11, 2011

Attribute #	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
2	2	1	1	1	0	0	0	0	0	1	1	0	0	0	1	1	1	2	2	1	1	1	0	0	1
3	1	0	2	2	1	0	0	1	2	2	2	2	2	1	2	2	2	2	1	1	1	0	2	0	0
4	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	3
5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0
6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9*	1	1	0	0	0	0	0	2	1	3	3	3	3	2	2	3	0	2	0	0	3	3	2	0	0
10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Existing Total	9	7	8	8	6	5	5	8	8	11	11	10	10	8	10	11	8	11	9	7	10	9	9	6	6
12	0	0	0	0	-0.5	-0.5	0	0	0	0	0	0	0	0	0	0	-0.5	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1
15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Project Total	11	9	10	10	7.5	6.5	7	10	10	13	13	12	12	10	12	13	9.5	13	11	9	12	11	11	8	7

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Note: The information

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Model 1: PFO - April
11, 2011

Attribute #	76	77	78	79	80	81	82	83	84
1	0	0	0	0	0	0	0	0	0
2	1	0	0	0	1	0	0	0	0
3	0	0	0	1	2	1	1	1	1
4	3	3	3	3	3	3	3	3	3
5	0	0	0	1	1	1	1	1	0
6	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	-1	0
8	0	0	0	0	0	0	4	4	4
9*	1	3	3	1	1	2	3	3	2
10	0	0	0	0	0	0	0	0	0
11	2	2	2	2	2	2	2	2	2
Existing Total	7	8	8	8	10	9	14	13	12
12	0	-0.5	-0.5	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0
14	1	1	1	1	1	1	1	1	1
15	0	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	-4	-4	-4
18*	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0
Project Total	8	8.5	8.5	9	11	10	11	10	9

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Note: The information

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13	14	15	16	17	18	19	20	21	22	23	24	25	26
1	0	1	1	1	1	0	0	0	0	0	0	0	0
1	0	1	1	1	1	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	1	1	1	1	1	1	1	1	1	1	1	1	1
1	1	1	1	1	1	1	1	1	1	1	1	1	1
0	0	0	0	3	3	3	3	0	0	0	3	3	0
1	1	1	1	1	1	1	1	1	1	1	1	1	1
0	0	0	1	1	1	1	1	1	1	1	1	1	1
0.5	0.5	0.5	1	1	1	1	1	1	1	1	1	1	1
1	1	1	1	1	1	1	1	1	1	1	1	1	1
0	0	0	0	0	0	0	0	0	0	0	0	0	1
0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	3	3	3	3	3	3	3	3	3	3	3	3	3
1.5	1	2	2	2.25	2.25	3.25	3.5	3.5	3.5	3.5	3.5	3	3
0	0	1	1	1	1	1	1	1	1	1	1	1	1
9.5	7	11	11	14.25	14.25	13.25	13.5	10.5	10.5	10.5	13.5	13	11
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	1	1	1	1	1	1	1	1	1	1	1	1	1
0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
10.75	8.25	12.25	12.25	15.5	15.5	14.5	14.75	11.75	11.75	11.75	14.75	14.25	12.25

of Forester's Co-Op.

Model 2: PFW -
April 11, 2011

Attribute #	27	28	29	30	47	48	49	50	51	52
1*	0	0	0	0	1	1	1	1	1	1
2*	0	0	0	0	0	0	0	0	0	0
3*	0	0	0	0	0	0	0	1	0	0
4*	0	0	0	0	0	0	0	1	0	0
5	1	1	1	1	1	1	1	1	1	1
6	1	1	1	1	1	0.5	1	1	0.5	1
7	0	3	0	0	0	0	0	3	3	3
8	1	1	2	2	2	2	2	2	2	2
9	1	1	2	2	3	3	3	3	3	3
Average of 8-9	1	1	2	2	2.5	2.5	2.5	2.5	2.5	2.5
Score of 8-9: 10	1	1	2	2	3	3	3	3	3	3
11	1	1	1	2	2	2	2	1	2	1
12	0	0	0	0	0	1	1	1	1	1
13	3	3	3	3	2	2	2	2	2	2
14	3	2.25	2.25	2.25	0.5	0.5	0.5	0.5	0.5	0.5
15	1	1	1	1	0	0	0	0	0	0
Existing Total	11	13.25	11.25	12.25	10.5	11	11.5	13.5	14	13.5
16	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0
18	1	1	1	1	2	2	2	2	2	2
19	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Project Total	12.25	14.5	12.5	13.5	12.75	13.25	13.75	17.75	16.25	15.75

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Model 2 PFW
Alternative 3

Model 2: PFW -

April 11, 2011 Segment #

Attribute #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
1*	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	1	1	0	0	0	0	0	0	0	0
2*	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	1	1	0	0	0	0	0	0	0	0
3*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	1	0.5	1	0.5	0.5	0.5	0.5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
6	1	0.5	1	0.5	0.5	0.5	1	1	0.5	0.5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	3	3	0	0	0	3	3	0
8	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
9	1	1	0	0	0	0	0	1	1	1	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1
Average of 8-9	1.5	1.5	1	1	1	1	0.5	1	1	1	0.5	0.5	0.5	0.5	0.5	1	1	1	1	1	1	1	1	1	1	1
Score of 8-9: 10	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
14	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	1.25	1.5	1.5	1	2	2	2.25	2.25	3.25	3.5	3.5	3.5	3.5	3.5	3	3
15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1
Existing Total	7.75	6.75	6.75	5.75	5.75	5.75	6.25	6.25	6.25	6.25	7.25	7.5	9.5	7	11	11	14.25	14.25	13.25	13.5	10.5	10.5	10.5	13.5	13	12
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
19	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Project Total	9	8	8	7	7	7	7.5	8	7.5	7.5	8.5	8.75	10.75	8.25	12.25	12.25	15.5	15.5	14.5	14.75	11.75	11.75	11.75	14.75	14.25	12.25

* Incomplete 2010 Fire Data

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Model 2 PFW
Alternative 3

Model 2: PFW -
April 11, 2011

Attribute #	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52
1*	0	0	0	0	2	2	2	1	2	2	1	1	1	2	2	2	2	1	1	1	1	1	1	1	1	1
2*	0	0	0	0	2	2	2	0	2	2	0	0	0	1	2	0	2	0	0	0	0	0	0	0	0	0
3*	0	0	0	0	1	0	2	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
4*	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.5	0.5	1	1	1	1	1	1	1	1
6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.5	0.5	1	1	1	0.5	1	1	0.5	1
7	0	3	0	0	0	0	3	3	3	0	0	3	3	3	0	0	0	0	0	0	0	0	0	3	3	3
8	1	1	2	2	2	2	2	2	2	2	2	2	1	1	1	1	2	2	2	2	2	2	2	2	2	2
9	1	1	2	2	2	2	3	2	2	3	2	2	2	2	2	3	3	3	4	3	3	3	3	3	3	3
Average of 8-9	1	1	2	2	2	2	2.5	2	2	2.5	2	2	1.5	1.5	1.5	2	2.5	2.5	3	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Score of 8-9: 10	1	1	2	2	2	2	3	2	2	3	2	2	2	2	2	2	3	3	3	3	3	3	3	3	3	3
11	1	1	1	2	2	2	2	1	1	1	1	1	1	0	1	2	2	2	2	2	2	2	2	1	2	1
12	0	0	0	0	0	1	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1
13	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	2	2	2	2	2	2	2
14	3	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2	2	2	2	1	2.25	1.25	1.25	1.25	0.5	0.5	0.5	0.5	0.5	0.5	0.5
15	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0
Existing Total	11	13.25	11.25	12.25	17.25	17.25	22.25	17.25	19.25	20.25	12	15	15	15	13	14.25	14.25	11.25	12.25	10.5	10.5	11	11.5	15.5	14	13
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.5	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	1	1	1	2	2	2	2	2	2	2
19	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Project Total	12.25	14.5	12.5	13.5	18.5	18.5	23.5	18.5	20.5	21.5	13.25	16.25	16.25	16.25	15.25	15.5	15.5	13	13.5	12.75	12.75	13.25	13.75	17.75	16.25	15.75

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65	66	67	68	69	70	71	72	73	74	75	76	77	78
2	2	2	2	2	2	2	2	2	2	2	2	2	2
1	1	0	2	0	0	1	2	1	0	0	1	2	2
1	2	0	1	1	0	0	1	1	0	0	1	0	1
0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	1	1	1	0.5	1	1	1	1	1	1	1	1	1
1	1	1	0.5	0.5	1	1	1	1	1	1	1	1	1
0	0	0	0	0	0	0	0	0	0	3	3	3	3
1	1	1	1	1	1	1	1	1	1	1	1	1	1
3	3	3	3	3	4	3	3	3	3	3	3	3	2
2	2	2	2	2	2.5	2	2	2	2	2	2	2	1.5
2	2	2	2	2	3	2	2	2	2	2	2	2	2
2	2	2	2	2	2	2	1	2	1	1	0	1	1
0	0	0	1	1	1	0	1	1	1	0	1	0	1
2	2	2	2	2	2	2	2	2	3	3	3	3	3
0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	1.25	1.25	0.75	0.75	0.75
0	0	0	0	0	0	0	0	0	0	0	0	0	0
12.5	13.5	10.5	14	11.5	12.5	11.5	13.5	13.5	12.25	14.25	15.75	15.75	17.75
0	0	0.5	0	0	0	0	0	0	0	0	0	0.5	0.5
0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	2	2	2	2	2	2	2	2	2	1	1	1	1
0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
4.75	15.75	13.25	16.25	13.75	14.75	13.75	15.75	15.75	14.5	15.5	17	17.5	19.5

Model 2: PFW -
April 11, 2011

Attribute #	79	80	81	82
1*	2	2	2	2
2*	1	1	1	2
3*	2	1	0	0
4*	0	0	0	0
5	1	1	1	1
6	1	1	1	1
7	3	3	3	0
8	1	1	1	1
9	2	3	3	3
Average of 8-9	1.5	2	2	2
Score of 8-9: 10	2	2	2	2
11	2	2	2	2
12	1	0	1	0
13	3	3	3	3
14	1	0.75	2.25	1.5
15	0	0	0	0
Existing Total	19	16.75	18.25	14.5
16	0	0	0	0
17	0	0	0	0
18	1	1	1	1
19	0.25	0.25	0.25	0.25
Project Total	20.25	18	19.5	15.75

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Model 2 PFW
Alternative 3

Model 2: PFW -
April 11, 2011

Attribute #	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78
1*	0	0	0	0	0	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
2*	0	0	0	0	0	1	1	1	1	1	2	2	1	1	0	2	0	0	1	2	1	0	0	1	2	2
3*	0	2	1	0	2	0	2	1	0	1	2	0	1	2	0	1	1	0	0	1	1	0	0	1	0	1
4*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.5	1	1	1	1	1	1	1	1	1
6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.5	0.5	1	1	1	1	1	1	1	1	1
7	0	3	3	3	3	3	3	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	3	3
8	2	2	2	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1
9	4	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	4	3	3	3	3	3	3	3	2
Average of 8-9	3	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2	2	2	2	2	2.5	2	2	2	2	2	2	2	1.5
Score of 8-9: 10	3	3	3	3	3	3	3	3	3	3	3	3	2	2	2	2	2	3	2	2	2	2	2	2	2	2
11	2	2	2	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2	1	1	0	1	1
12	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	1	1	1	0	1	1	1	0	1	0	1
13	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	3	3	3	3	3
14	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	1.25	1.25	0.75	0.75	0.75
15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Total	10.5	15.5	14.5	12.5	14.5	13.5	16.5	16.5	15.5	13.5	15.5	13.5	12.5	18.5	10.5	14	11.5	12.5	11.5	13.5	13.5	12.25	14.25	15.75	15.75	17.75
16	0	0	0.5	0.5	0	0	0	0	0	0	0	0	0	0	0.5	0	0	0	0	0	0	0	0	0	0.5	0.5
17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1	1	1
19	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Project Total	12.75	17.75	17.25	15.25	16.75	15.75	18.75	18.75	17.75	15.75	17.75	15.75	14.75	15.75	13.25	16.25	13.75	14.75	13.75	15.75	15.75	14.5	15.5	17	17.5	19.5

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Model 2: PFW -
April 11, 2011

Attribute #	79	80	81	82	83	84
1*	2	2	2	2	2	2
2*	1	1	1	2	1	1
3*	2	1	0	0	1	0
4*	0	0	0	0	0	0
5	1	1	1	1	1	1
6	1	1	1	1	1	1
7	3	3	3	0	0	0
8	1	1	1	1	1	1
9	2	3	3	3	3	3
Average of 8-9	1.5	2	2	2	2	2
Score of 8-9: 10	2	2	2	2	2	2
11	2	2	2	2	2	2
12	1	0	1	0	0	0
13	3	3	3	3	3	3
14	1	0.75	2.25	1.5	1.5	1.5
15	0	0	0	0	0	0
Existing Total	19	16.75	18.25	14.5	14.5	13.5
16	0	0	0	0	0	0
17	0	0	0	0	0	0
18	1	1	1	1	1	1
19	0.25	0.25	0.25	0.25	0.25	0.25
Project Total	20.25	18	19.5	15.75	15.75	14.75

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13	14	15	16	17	18	19	20	21	22	23	24	25	26
3	3	3	3	3	3	3	3	3	3	3	3	3	3
3	3	3	2	1	1	1	1	1	1	1	1	1	1
0	0	0	1	2	2	2	2	2	2	2	2	2	2
0	0	0	1	1	1	1	1	1	1	1	1	1	1
6	6	6	7	7	7	7	7	7	7	7	7	7	7
0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0
6.5	6.5	6.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5

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Model 3: NVA -

April 11, 2011

Attribute #	27	28	29	30	47	48	49	50	51	52
1	3	3	2	1	2	1	1	1	1	2
2	1	1	1	2	3	3	3	3	3	2
3	2	2	2	1	1	1	1	1	1	1
4	1	1	1	1	1	1	1	1	1	1
Existing Total	7	7	6	5	7	6	6	6	6	6
5	0.5	0.5	0.5	0.5	1	1	1	1	1	1
6	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0
Project Total	7.5	7.5	6.5	5.5	8	7	7	7	7	7

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Model 3 NVA
Alternative 3

Model 3: NVA -

April 11, 2011 Segment #																										
Attribute #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
1	2	1	1	1	1	1	2	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
2	3	3	3	3	3	3	3	1	1	1	3	3	3	3	3	2	1	1	1	1	1	1	1	1	1	1
3	0	0	0	0	0	0	0	2	2	2	0	0	0	0	0	1	2	2	2	2	2	2	2	2	2	2
4	1	1	0	0	0	0	0	1	1	1	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1
Existing Total	6	5	4	4	4	4	5	6	6	7	6	6	6	6	6	7	7	7	7	7	7	7	7	7	7	7
5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Project Total	6.5	5.5	4.5	4.5	4.5	4.5	5.5	6.5	6.5	7.5	6.5	6.5	6.5	6.5	6.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5

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Model 3 NVA
Alternative 3

Model 3: NVA -
April 11, 2011

Attribute #	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52
1	3	3	2	1	1	1	1	1	1	1	1	2	2	3	3	3	3	2	1	1	2	1	1	1	1	2
2	1	1	1	2	2	2	3	2	3	1	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	2
3	2	2	2	1	1	0	1	1	1	1	0	0	0	0	0	0	1	1	1	0	1	1	1	1	1	1
4	1	1	1	1	1	1	1	1	1	1	1	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1
Existing Total	7	7	6	5	5	4	6	5	6	4	5	7	7	8	7	7	8	7	6	5	7	6	6	6	6	6
5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	1	0.5	0.5	0.5	0.5	1	1	1	1	1	1	1
6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.5	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Project Total	7.5	7.5	6.5	5.5	5.5	4.5	6.5	5.5	6.5	4.5	5.5	7.5	7.5	8.5	8	7.5	8.5	8	6.5	6	8	7	7	7	7	7

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65	66	67	68	69	70	71	72	73	74	75	76	77	78
3	3	3	3	3	3	3	3	3	3	3	3	3	3
1	1	1	1	1	1	1	1	1	1	1	2	2	2
2	2	2	2	2	1	1	1	1	2	1	1	1	1
1	1	1	1	1	1	1	1	1	1	1	1	1	1
7	7	7	7	7	6	6	6	6	7	6	7	7	7
1	1	1	1	1	1	1	1	1	1	0.5	0.5	0.5	0.5
0	0	0.5	0	0	0	0	0	0	0	0	0	0.5	0.5
0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	8	8.5	8	8	7	7	7	7	8	6.5	7.5	8	8

Model 3: NVA -
April 11, 2011

Attribute #	79	80	81	82
1	3	3	3	3
2	2	1	1	1
3	1	2	1	2
4	1	1	1	1
Existing Total	7	7	6	7
5	0.5	0.5	0.5	0.5
6	0	0	0	0
7	0	0	0	0
Project Total	7.5	7.5	6.5	7.5

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Model 3 NVA
Alternative 3

Model 3: NVA -
April 11, 2011

Attribute #	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78
1	1	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
2	2	2	2	2	2	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2
3	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	1	1	1	1	2	1	1	1	1
4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Existing Total	5	7	7	7	7	6	6	7	6	6	6	7	7	7	7	7	7	6	6	6	6	7	6	7	7	7
5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.5	0.5	0.5	0.5
6	0	0	0.5	0.5	0	0	0	0	0	0	0	0	0	0	0.5	0	0	0	0	0	0	0	0	0	0.5	0.5
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Project Total	6	8	8.5	8.5	8	7	7	8	7	7	7	8	8	8	8.5	8	8	7	7	7	7	8	6.5	7.5	8	8

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Model 3: NVA -
April 11, 2011

Attribute #	79	80	81	82	83	84
1	3	3	3	3	3	3
2	2	1	1	1	1	1
3	1	2	1	2	1	1
4	1	1	1	1	1	1
Existing Total	7	7	6	7	6	6
5	0.5	0.5	0.5	0.5	0.5	0.5
6	0	0	0	0	0	0
7	0	0	0	0	0	0
Project Total	7.5	7.5	6.5	7.5	6.5	6.5

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Model 3 NVA
Alternative 3

14	15	16	17	18	19	20	21	22	23	24	25
0	1	0	1	0	0	0	0	0	0	0	0
0	2	1	1	1	1	0	0	1	0	1	0
1	2	2	0	2	1	1	1	2	2	2	2
2	2	2	2	2	2	2	2	2	3	2	2
1	1	1	1	1	1	1	1	1	1	0	0
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	-1	-1	0	0	0	-1	0	-1
0	0	0	0	0	0	0	0	0	0	4	4
2	1	0	1	2	1	1	3	1	3	3	2
0	0	0	0	0	0	0	0	0	0	0	0
2	2	2	2	2	2	2	2	2	2	2	2
8	11	8	8	9	7	7	9	9	10	14	11
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
8	11	8	8	9	7	7	9	9	10	14	11

Model 2: PFW -
April 11, 2011

Attribute #	Segment #							
	1	2	3	4	22	23	24	25
1*	2	2	2	2	2	2	2	2
2*	2	0	1	1	2	2	1	2
3*	0	1	1	2	2	0	1	1
4*	0	0	0	0	0	0	0	0
5	1	1	1	1	1	1	1	1
6	1	1	1	1	1	1	1	1
7	3	0	0	3	0	0	0	0
8	2	2	2	2	1	1	1	1
9	2	3	3	3	3	3	3	3
Average of 8-9	2	2.5	2.5	2.5	2	2	2	2
Score of 8-9: 10	2	3	3	3	2	2	2	2
11	2	2	2	2	2	2	2	2
12	0	0	0	0	1	1	0	0
13	2	2	2	2	2	3	2	2
14	0.5	0.5	0.5	0.5	0.5	2	1.5	1.5
15	0	0	0	0	0	0	0	0
Existing Total	19.5	17.5	18.5	22.5	19.5	20	17.5	18.5
16	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0
Project Total	19.5	17.5	18.5	22.5	19.5	20	17.5	18.5

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Model 1 PFO
New 230 kV Circuit

Model 1: PFO -
April 11, 2011

Attribute #	Segment #																								
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1	0	0	0	0	0	1	1	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0
2	0	1	1	0	0	1	1	1	0	0	0	0	0	0	2	1	1	1	1	0	0	1	0	1	0
3	2	2	2	2	1	1	1	0	0	1	1	1	1	1	2	2	0	2	1	1	1	2	2	2	2
4	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	2	2
5	1	1	1	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1	-1	0	0	0	-1	0	-1
9*	3	0	1	2	2	2	2	2	2	2	2	2	0	2	1	0	1	2	1	1	3	1	3	3	2
10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Existing Total	10	8	9	8	7	9	9	7	6	7	7	8	6	8	11	8	8	9	7	7	9	9	10	14	11
12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Project Total	10	8	9	8	7	9	9	7	6	7	7	8	6	8	11	8	8	9	7	7	9	9	10	14	11

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Model 2 PFW
New 230 kV Circuit

Model 2: PFW -																										
April 11, 2011		Segment #																								
Attribute #		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Project	1*	2	2	2	2	2	2	2	2	2	2	2	2	0	2	2	1	2	2	1	1	2	2	2	2	2
	2*	2	0	1	1	1	1	1	1	2	2	1	2	0	2	2	0	2	2	2	1	2	2	2	1	2
	3*	0	1	1	2	1	1	0	0	0	0	0	2	1	0	0	0	0	0	1	0	0	2	0	1	1
	4*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5	1	1	1	1	1	0	0	1	1	1	1	1	1	1	0	1	0	1	1	1	1	1	1	1	1
	6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.5	1	1	1	1	1	1	1	1	1
	7	3	0	0	3	3	0	0	0	0	3	3	3	3	3	3	0	0	0	0	0	3	3	0	0	0
	8	2	2	2	2	2	2	2	2	2	1	2	2	1	1	2	2	2	2	2	1	1	1	1	1	1
	9	2	3	3	3	3	3	3	3	3	3	3	3	2	2	3	3	3	3	4	4	3	3	3	3	3
	Average of 8-9	2	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2	2.5	2.5	1.5	1.5	2.5	2.5	2.5	2.5	3	2.5	2	2	2	2	2
	Score of 8-9: 10	2	3	3	3	3	3	3	3	3	2	3	3	2	2	3	3	3	3	3	3	2	2	2	2	2
	11	2	2	2	2	2	2	2	2	1	1	2	2	2	2	2	2	2	1	2	2	2	2	2	2	2
	12	0	0	0	0	1	1	1	1	1	1	0	1	0	0	1	1	1	1	1	0	0	1	1	1	0
	13	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	2	2
	14	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	2	1.5
15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Existing Total -		19.5	17.5	18.5	22.5	22.5	18.5	17.5	17.5	16.5	21.5	21.5	20.5	15.5	22.5	18	16.5	17.5	20.5	18.5	17.5	20.5	19.5	20	17.5	18.5
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Project Total -		19.5	17.5	18.5	22.5	22.5	18.5	17.5	17.5	16.5	21.5	21.5	20.5	15.5	22.5	18	16.5	17.5	20.5	18.5	17.5	20.5	19.5	20	17.5	18.5

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NVA
Circuit

13	14	15	16	17	18	19	20	21	22	23	24	25
3	3	3	3	3	3	3	3	3	3	3	3	3
2	1	1	1	1	1	1	1	1	1	1	1	1
1	1	1	1	1	1	1	2	1	1	1	1	1
1	1	1	1	1	1	1	1	1	1	1	1	1
7	6	6	6	6	6	6	7	6	6	6	6	6
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
7	6	6	6	6	6	6	7	6	6	6	6	6

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Model 3 NVA
New 230 kV Circuit

Model 3: NVA - April 11, 2011		Segment #																								
Attribute #		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
	1	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
	2	2	1	1	1	3	3	3	3	3	1	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1
	3	1	1	1	1	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	2	1	1	1	1	1
	4	1	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Existing Total		7	6	6	6	9	9	9	9	9	6	7	7	7	6	6	6	6	6	6	7	6	6	6	6	6
	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Project Total		7	6	6	6	9	9	9	9	9	6	7	7	7	6	6	6	6	6	6	7	6	6	6	6	6

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APPENDIX G: BIOLOGICAL RESOURCES

APPENDIX G: BIOLOGICAL RESOURCES OCCURRENCE TABLES

Habitat Requirements	Alternative 1	Alternative 2	Alternative 2A	Alternative 3
	Segment A, C, D	Segment A, B, G	Segment A, B, G, GV	Segment A, B, F, I
Found under rocks, wood, fern fronds, and on soil at the surface in winter and early spring.	A	A	A	A
Intertidal streams, including valley-foothill and desert riparian pools, cottonwoods, and sycamores; loose, gravelly areas of	U	U	U	A
Well as oak woodlands and old chaparral. Needs surface cover. Also needs old rodent burrows or other underground	A	Po(Segment G)	Po(Segment G)	A
Intertidal sources of deep water with dense, shrubby or emergent vegetation and semipermanent aquatic habitats (such as creeks and submergent vegetation and riparian species along the banks during dry periods).	A	Po	Po	A
Intertidal with a rocky substrate in a variety of habitats. Needs at least some open areas.	A	A	A	A
Intertidal pools, and open, sunny banks lacking heavy vegetative cover.	A	A	A	A
Intertidal to persist in valley-foothill woodlands, washes, floodplains, and wetlands in slow-flowing streams and temporary pools.	Pr	Pr	L	L
Intertidal constructed on north slopes near water in red firs, lodgepole pine, and Douglas fir.	A	A	A	A
Intertidal in the Central Valley, northeastern plateau, southeastern plateau, and foothills. Needs old burrows in sparse grassland, desert, and agricultural	L	L	L	L
Intertidal in juniper-sage flats, riparian areas, savannahs, agricultural lands, and other open areas such as grasslands, or alfalfa or grain	Po	Po	Po	Po
Intertidal in lower flood-bottoms of larger river systems. Nests in areas with blackberry, nettles, or wild grape.	A	Po	Po	A
Intertidal in areas with blackberry, nettles, or wild grape.	A	Po	Po	A
Intertidal in water; on cliffs, banks, dunes, mounds, and man-made structures or a ledge in an open site.	Po	Po	Po	U
Intertidal in shrub, grass savannah, grasslands, and foothill chaparral in areas where the microhabitat consists of deep canyons with rocky walls for roosting/nesting.	Pr	Po	Po	Po
Intertidal in areas with both nesting and wintering. Most nests are within one mile of water. Nests in live trees with open branches, especially Ponderosa	Po	A	A	A
Intertidal in areas including desert scrub, agricultural areas, pastoral habitat, and other open areas.	Pr	Pr	Pr	Pr
Intertidal in coastal sage scrub below 2500 feet in southern California. Low, open areas and slopes. Not all areas classified as coastal sage	U	A	A	A
Intertidal in areas with a canopy of black oaks and other deciduous hardwoods. Canopy is dense in shaded canyons, on north-facing slopes, and within 300	U	Po	Po	A
Intertidal in areas with low riparian in vicinity of water or in dry river bottoms, and in areas with bushes or on twigs projecting into pathways, usually	Pr	Po	Po	A
Intertidal in areas with shrubs and forests. Most common in open, dry habitats with open areas to protect bats from high temperatures. This species is very	L	L	L	L
Intertidal in areas with a variety of habitats, but most common in mesic sites. Roosts in the open areas. Very sensitive to human disturbance.	L	L	L	L
Intertidal in areas with a variety of habitats. Generally, this bat is encountered in broad open areas. Generally, this bat is encountered in desert washes, flood plains, chaparral, oak woodland, open	L	L	L	L
Intertidal in areas with meadows, and agricultural areas.				

Species	Scientific Name	Alternative 2	Alternative 2A	Alternative 3
		Segment A, B, G	Segment A, B, G, GV	Segment A, B, F, I
Western Red Bat	<i>Lasiurus blossomii</i>	L	L	L
Western Yellow Bat	<i>Lasiurus xanthinus</i>	A	A	A
San Diego Black-tailed Jackrabbit	<i>Lepus californicus bennettii</i>	Po	Po	A
Southern Grasshopper Mouse	<i>Onychomys torridus ramona</i>	Po	Po	Po
San Gabriel Mountains Bighorn Sheep	<i>Ovis canadensis nelsoni</i>	A	A	A
White-Eared Pocket Mouse	<i>Perognathus alticolus alticolus</i>	A	A	A
Tehachapi Pocket Mouse	<i>Perognathus alticolus inexpectatus</i>	U	U	A
Los Angeles Pocket Mouse	<i>Perognathus longimembris brevinasus</i>	A	A	A
Mohave Ground Squirrel	<i>Spermophilus mohavensis</i>	Po	Po	Po
American Badger	<i>Taxidea taxus</i>	Pr	Pr	Pr
Desert Kit Fox	<i>Vulpes macrotis arsipus</i>	L	L	L
Santa Ana Sucker	<i>Catostomus santaanae</i>	U	U	U
Unarmored Threespine Stickleback	<i>Gasterosteus aculeatus williamsoni</i>	A	A	Pr
Arroyo Chub	<i>Gila orcutti</i>	U	U	U
Santa Ana Speckled Dace	<i>Rhinichthys osculus</i>	A	A	A
California Legless Lizard	<i>Anniella pulchra</i>	U	U	Po
Southern Rubber Boa	<i>Charina bottae umbratica</i>	A	A	A
Southwestern Pond Turtle	<i>Actinemys marmorata pallida</i>	Pr	Pr	Po
San Bernardino Ringneck Snake	<i>Diadophis punctatus modestus</i>	Po	Po	A
Desert Tortoise	<i>Gopherus agassizii</i>	Pr	Pr	Pr
San Bernardino Mountain Kingsnake	<i>Lampropeltis zonata parvirubra</i>	A	A	A

TABLE G-1. SENSITIVE WILDLIFE SPECIES WITH POTENTIAL TO OCCUR IN THE PROJECT AREA

Species	Scientific Name	Regulatory Status			Habitat Requirements	Alternative 1	Alternative 2	Alternative 2A	Alternative 3
		Federal	State	Other		Segment A, C, D	Segment A, B, G	Segment A, B, G, GV	Segment A, B, F, I
San Gabriel Mountain Slender Salamander	<i>Batrachoseps gabrieli</i>	FSS			Known only from the San Gabriel Mountains. Found under rocks, wood, fern fronds, and on soil at the base of talus slopes. Most active on the surface in winter and early spring.	A	A	A	A
Arroyo Toad	<i>Bufo californicus</i>	FE, FS MIS		DFG SC	Semi-arid regions near washes or intermittent streams, including valley-foothill and desert riparian desert wash. Rivers with sandy banks, willows, cottonwoods, and sycamores; loose, gravelly areas of streams in drier parts of range.	U	U	U	A
Yellow-Blotched Salamander	<i>Ensatina eschscholtzii croceater</i>	FSS, BLM S		DFG SC	Forests and well-shaded canyons, as well as oak woodlands and old chaparral. Needs surface objects, such as logs, boards, and rocks. Also needs old rodent burrows or other underground retreats.	A	Po(Segment G)	Po(Segment G)	A
California Red-Legged Frog	<i>Rana aurora draytonii</i>	FT		DFG SC	Lowland and foothills in or near permanent sources of deep water with dense, shrubby or emergent riparian vegetation. This includes permanent and semipermanent aquatic habitats (such as creeks and cold water ponds) with emergent and submergent vegetation and riparian species along the edges; may estivate in rodent burrows or cracks during dry periods.	A	Po	Po	A
Foothill Yellow-Legged Frog	<i>Rana boylei</i>	FSS, BLM S		DFG SC	Partly-shaded, shallow streams and riffles with a rocky substrate in a variety of habitats. Needs at least some cobble-sized substrate for egg-laying.	A	A	A	A
Mt. Yellow-Legged Frog	<i>Rana muscosa</i>	FE, FSS		DFG SC	Streams containing perennial water, deep pools, and open, sunny banks lacking heavy vegetative cover.	A	A	A	A
Western Spadefoot Toad	<i>Spea hammondi</i>	BLM S		DFG SC	Primarily found in grasslands, but can also persist in valley-foothill woodlands, washes, floodplains, alluvial fans, playas, and alkali flats; reproduces in slow-flowing streams and temporary pools.	Pr	Pr	L	L
Northern Goshawk	<i>Accipiter gentilis</i>	FSS, BLM S		DFG SC	In or near coniferous forests. Nests constructed on north slopes near water in red firs, lodgepole pines, Jeffrey pines, and aspens.	A	A	A	A
Burrowing Owl	<i>Athene cunicularia</i>	BLM S		DFG SC, USFWS BCC	Lowlands throughout California, including the Central Valley, northeastern plateau, southeastern deserts, and coastal areas. Uses rodent burrows in sparse grassland, desert, and agricultural habitats.	L	L	L	L
Swainson's Hawk	<i>Buteo swainsonii</i>	FSS	ST	USFWS BCC	Breeds in grasslands with scattered trees, juniper-sage flats, riparian areas, savannahs, agricultural areas, and ranches. Requires adjacent suitable foraging areas such as grasslands, or alfalfa or grain fields supporting rodent populations.	Po	Po	Po	Po
Western Yellow-Billed Cuckoo	<i>Coccyzus americanus occidentalis</i>	FC, FSS	SE	USFWS BCC	Riparian forest nester, along the broad, lower flood-bottoms of larger river systems. Nests in willow/cottonwood forest, with understory of blackberry, nettles, or wild grape.	A	Po	Po	A
Southwestern Willow Flycatcher	<i>Empidonax traillii eximius</i>	FE	SE		Riparian woodlands in southern California.	A	Po	Po	A
Peregrine falcon	<i>Falco peregrinus</i>	Delisted, FSS	SE	DFG FP, USFWS BCC	Near wetlands, lakes, rivers, or other water; on cliffs, banks, dunes, mounds, and man-made structures. Nest consists of a scrape on a depression or a ledge in an open site.	Po	Po	Po	U
California Condor	<i>Gymnogyps californianus</i>	FE	SE		Requires vast expanses of open savannah, grass savannah, grasslands, and foothill chaparral in mountain ranges of moderate altitude. Microhabitat consists of deep canyons with rocky walls for nesting sites. Forages up to 150 miles from roost/nest.	Pr	Po	Po	Po
Bald Eagle	<i>Haliaeetus leucocephalus</i>	Delisted, FSS	SE	DFG FP	Ocean shore, lake margins, and rivers for both nesting and wintering. Most nests are within one mile of water. Nests in large, old-growth or dominant live trees with open branches, especially Ponderosa pine. Roosts communally in winter.	Po	A	A	A
Loggerhead Shrike	<i>Lanius ludovicianus</i>			DFG SC, USFWS BCC	Open space with patchy shrubs and trees, including desert scrub, agricultural areas, pastoral habitat, and suburban areas.	Pr	Pr	Pr	Pr
Coastal California Gnatcatcher	<i>Polioptila californica californica</i>	FT, FSS		DFG SC	Obligate, permanent resident of coastal sage scrub below 2500 feet in southern California. Low, coastal sage scrub in arid washes, on mesas and slopes. Not all areas classified as coastal sage scrub are occupied.	U	A	A	A
California Spotted Owl	<i>Strix occidentalis occidentalis</i>	FSS, FS MIS, BLM S		DFG SC, USFWS BCC	Mixed conifer forest, often with an understory of black oaks and other deciduous hardwoods. Canopy closure >40%. Most often found in deep-shaded canyons, on north-facing slopes, and within 300 meters of water.	U	Po	Po	A
Least Bell's Vireo	<i>Vireo bellii pusillus</i>	FE	SE	USFWS BCC	Summer resident of southern California in low riparian in vicinity of water or in dry river bottoms, below 2000 feet. Nests placed along margins of bushes or on twigs projecting into pathways, usually willow, baccharis, mesquite.	Pr	Po	Po	A
Pallid Bat	<i>Antrozous pallidus</i>	FSS, BLM S		DFG SC, WBWG H	Deserts, grasslands, shrublands, woodlands and forests. Most common in open, dry habitats with rocky areas for roosting. Roosts must protect bats from high temperatures. This species is very sensitive to disturbance of roosting sites.	L	L	L	L
Townsend's Big-Eared Bat	<i>Corynorhinus townsendii</i>	FSS, BLM S		DFG SC, WBWG H	Occurs throughout California in a variety of habitats, but most common in mesic sites. Roosts in the open, hanging from horizontal and vertical surfaces. Very sensitive to human disturbance.	L	L	L	L
Western Mastiff Bat	<i>Eumops perotis californicus</i>	BLM S		DFG SC WBWG H	In California this species is most frequently encountered in broad open areas. Generally, this bat is found in a variety of habitats, from dry desert washes, flood plains, chaparral, oak woodland, open ponderosa pine forest, grassland, montane meadows, and agricultural areas.	L	L	L	L

Species	Scientific Name	Regulatory Status			Habitat Requirements	Alternative 1	Alternative 2	Alternative 2A	Alternative 3
		Federal	State	Other		Segment A, C, D	Segment A, B, G	Segment A, B, G, GV	Segment A, B, F, I
Western Red Bat	<i>Lasiurus blossevillii</i>	FSS		DFG SC, WBWG H	Roosts primarily in trees, two to 40 feet off the ground. Occurs from sea level up through mixed conifer forests. Prefers habitat edges and mosaics with trees that are protected from above and open below, with open areas for foraging.	L	L	L	L
Western Yellow Bat	<i>Lasiurus xanthinus</i>			DFG SC WBWG H	Western yellow bats are thought to be noncolonial. Individuals usually roost in trees, hanging from the underside of a leaf. They are commonly found in the southwestern U.S. roosting in the skirt of dead fronds in both native and non-native palm trees.	A	A	A	A
San Diego Black-tailed Jackrabbit	<i>Lepus californicus bennettii</i>			DFG SC	Coastal southern California, mainly in open herbaceous/tree edges and open coastal sage scrub, chaparral, and forest habitats.	Pr	Po	Po	A
Southern Grasshopper Mouse	<i>Onychomys torridus ramona</i>			DFG SC	Resides in arid desert habitats in the Mojave Desert and the California Central Valley. Preferred habitat consists of alkali and desert scrub with low to moderate cover, although it can also occur less frequently in succulent shrub, washes, riparian areas, coastal scrub, mixed chaparral, and bitterbrush habitats.	Po	Po	Po	Po
San Gabriel Mountains Bighorn Sheep	<i>Ovis canadensis nelsoni</i>	FSS, BLM S			Widely distributed from the White Mountains in Mono County to the Chocolate Mountains in Imperial County. Open, rocky, steep areas with available water and herbaceous forage.	A	A	A	A
White-Eared Pocket Mouse	<i>Perognathus alticolus alticolus</i>	FSS, BLM S		DFG SC	Ponderosa and Jeffrey pine habitats, also in mixed chaparral and sagebrush habitats in the San Bernardino Mountains. Burrows are constructed in loose soil.	U	A	A	A
Tehachapi Pocket Mouse	<i>Perognathus alticolus inexpectatus</i>	FSS		DFG SC	Arid annual grassland and desert shrub communities, but also found in fallow grain fields and in Russian thistle. Burrows for cover and nesting. Aestivates and hibernates during extreme weather. Forages on open ground and under shrubs.	Po	U	U	A
Los Angeles Pocket Mouse	<i>Perognathus longimembris brevinasus</i>	FSS		DFG SC	Lower-elevation grasslands and coastal sage communities in and around the Los Angeles basin. Open ground with fine sandy soils; may not dig extensive burrows, hiding under weeds and dead leaves instead.	A	A	A	A
Mohave Ground Squirrel	<i>Spermophilus mohavensis</i>	None	ST		Open desert scrub, alkali scrub and Joshua tree woodland. Also feeds in annual grasslands, restricted to Mojave desert. Prefers sandy to gravelly soils, avoids rocky areas, uses burrows at base of shrubs for cover. Nests are in burrows.	Po	Po	Po	Po
American Badger	<i>Taxidea taxus</i>			DFG SC, CA Fur-bearing Mammal	Open stages of shrub, forest, and herbaceous habitats, including grasslands. Requires friable soil for burrowing.	L	Pr	Pr	Pr
Desert Kit Fox	<i>Vulpes macrotis arsipus</i>			CA Fur-bearing Mammal	Multiple habitats including desert scrub, saltbush, chaparral, and grassland.	L	L	L	L
Santa Ana Sucker	<i>Catostomus santaanae</i>	FT, FSS		DFG SC	Habitat generalists, but prefer sand-rubble-boulder bottoms, cool clear water, and algae.	U	U	U	U
Unarmored Threespine Stickleback	<i>Gasterosteus aculeatus williamsoni</i>	FE, FSS	SE	DFG FP	Weedy pools, backwaters, and among emergent vegetation at the stream edge in small southern California streams; cool (< 27° C) water with abundant vegetation.	A	A	A	Pr
Arroyo Chub	<i>Gila orcutti</i>	FSS		DFG SC	Los Angeles basin south coastal streams; slow water stream sections with mud or sand bottoms, feeds heavily on aquatic vegetation and associated invertebrates.	U	U	U	U
Santa Ana Speckled Dace	<i>Rhinichthys osculus</i>	FSS		DFG SC	Headwaters of the Santa Ana and the San Gabriel Rivers, may be extirpated from the Los Angeles River system. Requires permanent flowing streams with summer water temperatures of 17° - 20° C. Usually inhabits shallow cobble and gravel riffles.	A	A	A	A
California Legless Lizard	<i>Anniella pulchra</i>	FSS		DFG SC	Sandy or loose loamy soils under sparse vegetation. Soil moisture essential; this species prefers soils with high moisture content.	U	U	U	Po
Southern Rubber Boa	<i>Charina bottae umbratica</i>	FSS	ST		Restricted to the San Bernardino and San Jacinto Mountains; found in a variety of montane forest habitats. Found in vicinity of streams or wet meadows, requires loose, moist soil for burrowing. Seeks cover in rotten logs.	A	A	A	A
Southwestern Pond Turtle	<i>Actinemys marmorata pallida</i>	FSS		DFG SC	Requires some slow-water habitat; also, shallow water with emergent vegetation. Nesting requires soils with a high clay or silt fraction to retain moisture. In California, this species is known from only two drainages on the desert slope in California: the Mojave River (San Bernardino County) and Andreas Canyon (Riverside County). From sea level to 1430 meters.	U	Pr	Pr	Po
San Bernardino Ringneck Snake	<i>Diadophis punctatus modestus</i>	FSS			Most common in open, rocky areas, often in somewhat moist microhabitats near intermittent streams. Avoids moving through open or barren areas by restricting movements to areas of surface litter or herbaceous vegetation.	A	Po	Po	A
Desert Tortoise	<i>Gopherus agassizii</i>	FT	ST		Most common in desert scrub, desert wash and Joshua tree habitats; occurs in almost every desert habitat. Requires friable soil for burrow and nest construction creosote bush habitat with annual wildflower blooms.	Pr	Pr	Pr	Pr
San Bernardino Mountain Kingsnake	<i>Lampropeltis zonata parvirubra</i>	FSS		DFG SC	Big cone spruce and chaparral at lower elevations; black oak, incense cedar, Jeffrey pine, and Ponderosa pine at higher elevations. Well-lit canyons with rocky outcrops or rocky talus.	A	A	A	A

Habitat Requirements	Alternative 1	Alternative 2	Alternative 2A	Alternative 3
	Segment A, C, D	Segment A, B, G	Segment A, B, G, GV	Segment A, B, F, I
Mojave and Colorado Deserts. Prefers moderate to dense brush with a mix of brushy cover and rocky soil such as coastal sagebrush and mountains.	L	Pr	Pr	L
Found in arid and semi-arid climate conditions. Prefers friable, sandy soils.	Pr	Pr	Pr	L
Found from Northwest Baja California. From sea level to 10,000 feet. Aquatic, found in or near permanent fresh water, often in riparian vegetation.	U	L	L	Po
Found occasionally in depressions (e.g., ruts and ditches) that are not used for agriculture.	A	A	A	Po

Occurrence Code:

A = Absent: Species or sign not observed on the site, outside of the known range, and conditions unsuitable for occurrence

U = Unlikely: Species or sign not observed on the site, but conditions marginal for occurrence

Po = Possible: Species or sign not observed on the site, but conditions suitable for occurrence and/or an historical record exists in the vicinity

L = Likely: Species or sign not observed on the site, but reasonably certain to occur on the site based on conditions, species ranges, and recent records

Pr = Present: Species or sign of their presence recently

TABLE G-2. SPECIAL-STATUS PLANT SPECIES WITH

Scientific Name Common Name ¹	Habitat Requirements ²	Flowering period ²	e 3	Reconductoring	New 230kV Circuit
<i>Allium shevockii</i> Spanish Needle onion	Pinyon and juniper woodland and upper montane coniferous forest. 2,789 – 8,202 feet.	May – June	able habitat exists; species is known able habitat exists; species is known within 10 able habitat exists; species is not known able habitat exists; species is not known	Segment K: Absent. No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment.	Segment J: Absent. No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment.
<i>Androsace elongata</i> ssp. <i>acuta</i> California androsace	Chaparral, cismontane woodland, coastal scrub, meadows and seeps, pinyon and juniper woodland, and valley and foothill grassland. 1000 – 3,940 feet	March – June	able habitat exists in ; elevation is not known within 10 able habitat exists in and Mojave Creosote appropriate; and species of segment. able habitat exists (F2 island; elevation is not known within 10 le habitat exists in Chamise Chaparral, Scrub Oak Chaparral; species is not known	Segment K: Possible. Suitable habitat exists in Riversidian Sage Scrub and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment J: Possible. Suitable habitat exists in Chamise Chaparral and Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
<i>Arenaria macradenia</i> var. <i>kusche</i> Kusche's sandwort	Openings in chaparral, on granitic soils. 4,000 – 5,600 feet	June – July	able habitat exists; and species is not ment. able habitat exists; species is not known able habitat exists; species is not known le habitat exists in b Oak Chaparral; species is not known	Segment K: Unlikely. Suitable habitat exists in Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.	Segment J: Unlikely. Suitable habitat exists in Chamise Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.

Species	Scientific Name	Regulatory Status			Habitat Requirements	Alternative 1	Alternative 2	Alternative 2A	Alternative 3
		Federal	State	Other		Segment A, C, D	Segment A, B, G	Segment A, B, G, GV	Segment A, B, F, I
Coastal Rosy Boa	<i>Lichanura trivirgata roseofusca</i>	FSS, BLM S			Desert and chaparral from the coast to the Mojave and Colorado Deserts. Prefers moderate to dense vegetation and rocky cover. Habitats with a mix of brushy cover and rocky soil such as coastal canyons and hillsides, desert canyons, washes and mountains.	L	Pr	Pr	L
Coast (San Diego) Horned Lizard	<i>Phrynosoma coronatum blainvillii</i>	FSS		DFG SC	Inhabits coastal sage scrub and chaparral in arid and semi-arid climate conditions. Prefers friable, rocky, or shallow sandy soils.	Pr	Pr	Pr	L
Two-Striped Garter Snake	<i>Thamnophis hammondi</i>	FSS, BLM S		DFG SC	Coastal California from vicinity of Salinas to Northwest Baja California. From sea level to approximately 7,000 feet elevation. Highly aquatic, found in or near permanent fresh water, often along streams with rocky beds and riparian vegetation.	U	L	L	Po
Riverside Fairy Shrimp	<i>Streptocephalus woottoni</i>	FE			Vernal pools; deep, cool water pools and occasionally in depressions (e.g., ruts and ditches) that support suitable habitat.	A	A	A	Po

Listing Status:

U.S. Fish and Wildlife Service (USFWS)
FE = listed as Endangered under the federal Endangered Species Act
FT = listed as Threatened under the federal Endangered Species Act
FS= listed as Sensitive under the federal Endangered Species Act
FPE= proposed listing under the federal Endangered Species Act
BCC = Bird of Conservation Concern
Delisted = Formerly listed as threatened or endangered under the federal Endangered Species Act
U.S. Forest Service (FS)
FSS = listed as Forest Service Sensitive
MIS = listed as Forest Service Management Indicator Species
Bureau of Land Management (BLM)
S = listed as BLM Sensitive
California Department of Fish and Game (CDFG)
SE = listed as Endangered under the California Endangered Species Act
ST = listed as Threatened under the California Endangered Species Act
SR=listed as Rare under the California Endangered Species Act
SC= listed as Species of Concern
FP = listed as Fully Protected under CDFG Code
Western Bat Working Group (WBWG)
H = listed as High Priority
Other
CA Fur-bearing Mammal = Listed under California Fur-bearing Mammal Statute § 4000 – 4012

Occurrence Code:

A = Absent: Species or sign not observed on the site, outside of the known range, and conditions unsuitable for occurrence
U = Unlikely: Species or sign not observed on the site, but conditions marginal for occurrence
Po = Possible: Species or sign not observed on the site, but conditions suitable for occurrence and/or an historical record exists in the vicinity
L = Likely: Species or sign not observed on the site, but reasonably certain to occur on the site based on conditions, species ranges, and recent records
Pr = Present: Species or sign of their presence recently

TABLE G-2. SPECIAL-STATUS PLANT SPECIES WITH POTENTIAL TO OCCUR WITHIN THE PROJECT AREA

Scientific Name Common Name ¹	Habitat Requirements ²	Flowering period ²	Conservation Status ³	Potential for Occurrence within the Project Area ⁴					
				Alternative 1	Alternative 2	Alternative 2a	Alternative 3	Reconductoring	New 230kV Circuit
<i>Allium shevockii</i> Spanish Needle onion	Pinyon and juniper woodland and upper montane coniferous forest. 2,789 – 8,202 feet.	May – June	Fed: None CA: None CNPS: 1B.3 USFS: None BLM: SS	Segment A: Absent. No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment. Segment C: Absent. No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment. Segment D: Absent. No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment.	Segment A: Absent. No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment. Segment B: Absent. No suitable habitat exists; elevation is appropriate; species is known within 10 miles of segment. Segment G: Absent. No suitable habitat exists; elevation is appropriate; species is known within 10 miles of segment.	Segment A: Absent. No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment. Segment B: Absent. No suitable habitat exists; elevation is appropriate; species is known within 10 miles of segment. Segment G: Absent. No suitable habitat exists; elevation is appropriate; species is known within 10 miles of segment. Segment 2a: Absent. No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment.	Segment A: Absent. No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment. Segment B: Absent. No suitable habitat exists; elevation is appropriate; species is known within 10 miles of segment. Segment F: Absent. No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment. Segment I: Absent. No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment.	Segment K: Absent. No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment.	Segment J: Absent. No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment.
<i>Androsace elongata</i> ssp. <i>acuta</i> California androsace	Chaparral, cismontane woodland, coastal scrub, meadows and seeps, pinyon and juniper woodland, and valley and foothill grassland. 1000 - 3,940 feet	March – June	Fed: None CA: None CNPS: 4.2 USFS: Watch List	Segment A: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. Segment C: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. Segment D: Possible. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Mojave Creosote Bush Scrub, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment A: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. Segment B: Possible. Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. Segment G: Possible. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment A: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. Segment B: Possible. Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. Segment G: Possible. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. Segment 2a: Possible. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment A: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. Segment B: Possible. Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. Segment F: Possible. Suitable habitat exists (F2 part) in California Annual Grassland; elevation is appropriate; and species is not known within 10 miles of segment. Segment I: Possible. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment K: Possible. Suitable habitat exists in Riversidian Sage Scrub and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment J: Possible. Suitable habitat exists in Chamise Chaparral and Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
<i>Arenaria macradenia</i> var. <i>kusche</i> Kusche's sandwort	Openings in chaparral, on granitic soils. 4,000 - 5,600 feet	June – July	Fed: None CA: None CNPS: 1B.1 USFS Sensitive	Segment A: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. Segment C: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. Segment D: Unlikely. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.	Segment A: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. Segment B: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. Segment G: Possible. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment A: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. Segment B: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. Segment G: Possible. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. Segment 2a: Possible. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment A: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. Segment B: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. Segment F: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. Segment I: Possible. Suitable habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment K: Unlikely. Suitable habitat exists in Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.	Segment J: Unlikely. Suitable habitat exists in Chamise Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.

Potential for Occurrence within the Project Area ⁴				
	Alternative 2a	Alternative 3	Reconductoring	New 230kV Circuit
known within habitat tion is ot t.	<p>Segment A: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment.</p> <p>Segment B: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.</p> <p>Segment G: Unlikely. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.</p> <p>Segment 2a: Unlikely. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.</p>	<p>Segment A: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment.</p> <p>Segment B: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.</p> <p>Segment F: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.</p> <p>Segment I: Unlikely. Suitable habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.</p>	<p>Segment K: Unlikely. Suitable habitat exists in Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.</p>	<p>Segment J: Unlikely. Suitable habitat exists in Chamise Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.</p>
known e n within e n within	<p>Segment A: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment.</p> <p>Segment B: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.</p> <p>Segment G: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.</p> <p>Segment 2a: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.</p>	<p>Segment A: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment.</p> <p>Segment B: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.</p> <p>Segment F: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.</p> <p>Segment I: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.</p>	<p>Segment K: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.</p>	<p>Segment J: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.</p>
habitat Scrub; cies is ment. habitat land b; cies is ment. habitat land, Sage arral; cies is ment.	<p>Segment A: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment.</p> <p>Segment B: Possible. Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment.</p> <p>Segment G: Possible. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riverside Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. Segment 2a: Unlikely. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.</p>	<p>Segment A: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment.</p> <p>Segment B: Possible. Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment.</p> <p>Segment F: Possible. Suitable habitat exists (F2 part) in California Annual Grassland; elevation is appropriate; and species is not known within 10 miles of segment.</p> <p>Segment I: Possible. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riverside Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.</p>	<p>Segment K: Possible. Suitable habitat exists in Riverside Sage Scrub and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.</p>	<p>Segment J: Possible. Suitable habitat exists in Chamise Chaparral and Riverside Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment.</p>

Scientific Name Common Name ¹	Habitat Requirements ²	Flowering period ²			
			Segment 3	Reconductoring	New 230kV Circuit
<i>Astragalus lentiginosus</i> var. <i>antonius</i> San Antonio milk-vetch	Lower montane coniferous forest, upper montane coniferous forest. 4,920 - 8,530 feet in elevation.	April – July	able habitat exists; and species is not ment. able habitat exists; species is not known able habitat exists; species is not known able habitat exists; ies is not known	Segment K: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment J: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.
<i>Astragalus lentiginosus</i> var. <i>sierrae</i> Bear Valley woollypod	Mojavean desert scrub, meadows and seeps, pinyon and juniper woodland, and upper montane coniferous forest. 5,994 - 8,660 feet	April – August	able habitat exists in Mojave Creosote Bush scrub; elevation is not known within 10 able habitat exists in Mojave Creosote Bush appropriate; and species is segment. Segment F: exists; elevation is not known within 10 able habitat exists; and species is not ment.	Segment K: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment.	Segment J: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment.
<i>Berberis nevinii</i> Nevin's barberry	Chaparral, coastal and riparian scrub, and cismontane woodland; gravelly soils. Associated with steep slopes and low-grade sandy washes. 900 - 2,700 feet	March – June	able habitat exists in ; elevation is not known within 10 habitat exists in ; elevation is known within 10 miles able habitat exists; species is not known habitat exists in Riparian Sage Scrub, and on is appropriate; and miles of segment.	Segment K: Likely. Suitable habitat exists in Riversidian Sage Scrub and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.	Segment J: Likely. Suitable habitat exists in Chamise Chaparral and Riversidian Sage Scrub; elevation is appropriate; and species is known within 10 miles of segment.

Scientific Name Common Name ¹	Habitat Requirements ²	Flowering period ²	Conservation Status ³	Potential for Occurrence within the Project Area ⁴					
				Alternative 1	Alternative 2	Alternative 2a	Alternative 3	Reconductoring	New 230kV Circuit
<i>Arctostaphylos gabrielensis</i> San Gabriel Manzanita	Chaparral. 4,995 feet	March	Fed: None CA: None CNPS: 1B.2 USFS Sensitive	Segment A: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. Segment C: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. Segment D: Unlikely. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.	Segment A: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. Segment B: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. Segment G: Unlikely. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.	Segment A: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. Segment B: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. Segment G: Unlikely. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment. Segment 2a: Unlikely. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.	Segment A: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. Segment B: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. Segment F: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. Segment I: Unlikely. Suitable habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.	Segment K: Unlikely. Suitable habitat exists in Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.	Segment J: Unlikely. Suitable habitat exists in Chamise Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.
<i>Astragalus bicristatus</i> crested milk-vetch	Lower montane coniferous forest, upper montane coniferous forest; sandy or rocky soils, mostly carbonate. 5,580 - 9,005 feet	May – August	Fed: None CA: None CNPS: 4.3 USFS Sensitive	Segment A: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. Segment C: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. Segment D: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment A: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. Segment B: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. Segment G: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment A: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. Segment B: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. Segment G: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. Segment 2a: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment A: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. Segment B: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. Segment F: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. Segment I: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment K: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment J: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.
<i>Astragalus brauntonii</i> Braunton's milk-vetch	Chaparral, coastal scrub, valley and foothill grassland, on south-, west-, and east-facing slopes, in open areas, following fire or other physical disturbance; usually sandstone with carbonate layers. <2,100 feet	January – August	Fed: FE CA: None CNPS: 1B.1	Segment A: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. Segment C: Unlikely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is not appropriate; and species is not known within 10 miles of segment. Segment D: Possible. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Mojave Creosote Bush Scrub, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment A: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. Segment B: Possible. Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. Segment G: Possible. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment A: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. Segment B: Possible. Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. Segment G: Possible. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. Segment 2a: Unlikely. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.	Segment A: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. Segment B: Possible. Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. Segment F: Possible. Suitable habitat exists (F2 part) in California Annual Grassland; elevation is appropriate; and species is not known within 10 miles of segment. Segment I: Possible. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment K: Possible. Suitable habitat exists in Riversidian Sage Scrub and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment J: Possible. Suitable habitat exists in Chamise Chaparral and Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment.

Scientific Name Common Name ¹	Habitat Requirements ²	Flowering period ²	Conservation Status ³	Potential for Occurrence within the Project Area ⁴					
				Alternative 1	Alternative 2	Alternative 2a	Alternative 3	Reconductoring	New 230kV Circuit
<i>Astragalus lentiginosus</i> var. <i>antonius</i> San Antonio milk-vetch	Lower montane coniferous forest, upper montane coniferous forest. 4,920 - 8,530 feet in elevation.	April – July	Fed: None CA: None CNPS: 1B.3 USFS Sensitive	Segment A: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. Segment C: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. Segment D: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment A: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. Segment B: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. Segment G: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment A: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. Segment B: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. Segment G: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. Segment 2a: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment A: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. Segment B: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. Segment F: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. Segment I: Absent. No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment.	Segment K: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment J: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.
<i>Astragalus lentiginosus</i> var. <i>sierrae</i> Bear Valley woollypod	Mojavean desert scrub, meadows and seeps, pinyon and juniper woodland, and upper montane coniferous forest. 5,994 - 8,660 feet	April – August	Fed: None CA: None CNPS: 1B.2 USFS Sensitive	Segment A: Unlikely. Suitable habitat exists in Joshua Tree Woodland, Mojave Creosote Bush Scrub, and Mojave Wash Scrub; elevation is not appropriate; and species is not known within 10 miles of segment. Segment C: Unlikely. Suitable habitat exists in Joshua Tree Woodland, Mojave Creosote Bush Scrub, and Mojave Wash Scrub; elevation is not appropriate; and species is not known within 10 miles of segment. Segment D: Unlikely. Suitable habitat exists in Joshua Tree Woodland and Mojave Creosote Bush Scrub; elevation is not appropriate; and species is not known within 10 miles of segment.	Segment A: Unlikely. Suitable habitat exists in Joshua Tree Woodland, Mojave Creosote Bush Scrub, and Mojave Wash Scrub; elevation is not appropriate; and species is not known within 10 miles of segment. Segment B: Unlikely. Suitable habitat exists in Joshua Tree Woodland and Mojave Creosote Bush Scrub; elevation is not appropriate; and species is not known within 10 miles of segment. Segment G: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment.	Segment A: Unlikely. Suitable habitat exists in Joshua Tree Woodland, Mojave Creosote Bush Scrub, and Mojave Wash Scrub; elevation is not appropriate; and species is not known within 10 miles of segment. Segment B: Unlikely. Suitable habitat exists in Joshua Tree Woodland and Mojave Creosote Bush Scrub; elevation is not appropriate; and species is not known within 10 miles of segment. Segment G: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. Segment 2a: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment.	Segment A: Unlikely. Suitable habitat exists in Joshua Tree Woodland, Mojave Creosote Bush Scrub, and Mojave Wash Scrub; elevation is not appropriate; and species is not known within 10 miles of segment. Segment B: Unlikely. Suitable habitat exists in Joshua Tree Woodland and Mojave Creosote Bush Scrub; elevation is not appropriate; and species is not known within 10 miles of segment. Segment F: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. Segment I: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment.	Segment K: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment.	Segment J: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment.
<i>Berberis nevinii</i> Nevin's barberry	Chaparral, coastal and riparian scrub, and cismontane woodland; gravelly soils. Associated with steep slopes and low-grade sandy washes. 900 - 2,700 feet	March – June	Fed: FE CA: SE CNPS: 1B.1	Segment A: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. Segment C: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. Segment D: Likely. Suitable habitat exists in Chamise Chaparral, Mojave Creosote Bush Scrub, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment	Segment A: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. Segment B: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. Segment G: Likely. Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.	Segment A: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. Segment B: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. Segment G: Likely. Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment. Segment 2a: Likely. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.	Segment A: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. Segment B: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. Segment F: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. Segment I: Likely. Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is known within 10 miles of segment.	Segment K: Likely. Suitable habitat exists in Riversidian Sage Scrub and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.	Segment J: Likely. Suitable habitat exists in Chamise Chaparral and Riversidian Sage Scrub; elevation is appropriate; and species is known within 10 miles of segment.

Potential for Occurrence within the Project Area ⁴				
	Alternative 2a	Alternative 3	Reconductoring	New 230kV Circuit
known within within	<p>Segment A: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment.</p> <p>Segment B: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.</p> <p>Segment G: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.</p> <p>Segment 2a: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.</p>	<p>Segment A: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment.</p> <p>Segment B: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.</p> <p>Segment F: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.</p> <p>Segment I: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.</p>	<p>Segment K: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.</p>	<p>Segment J: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.</p>
habitat Scrub; species is ment. habitat and ; species is ment. habitat and, Sage chaparral; species is ment.	<p>Segment A: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment.</p> <p>Segment B: Possible. Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment.</p> <p>Segment G: Possible. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. Segment 2a: Possible. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.</p>	<p>Segment A: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment.</p> <p>Segment B: Possible. Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment.</p> <p>Segment F: Possible. Suitable habitat exists (F2 part) in California Annual Grassland; elevation is appropriate; and species is not known within 10 miles of segment.</p> <p>Segment I: Possible. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.</p>	<p>Segment K: Possible. Suitable habitat exists in Riversidian Sage Scrub and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.</p>	<p>Segment J: Possible. Suitable habitat exists in Chamise Chaparral and Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment.</p>
appropriate; 0 miles habitat and; species is t. habitat assland; species is t.	<p>Segment A: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.</p> <p>Segment B: Likely. Suitable habitat exists in California Annual Grassland; elevation is appropriate; and species is known within 10 miles of segment.</p> <p>Segment G: Likely. Suitable habitat exists in California Annual Grassland; elevation is appropriate; and species is known within 10 miles of segment.</p> <p>Segment 2a: Likely. Suitable habitat exists in Interior Live Oak Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is known within 10 miles of segment.</p>	<p>Segment A: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.</p> <p>Segment B: Likely. Suitable habitat exists in California Annual Grassland; elevation is appropriate; and species is known within 10 miles of segment.</p> <p>Segment F: Likely. Suitable habitat exists (F2 part) in California Annual Grassland; elevation is appropriate; and species is known within 10 miles of segment.</p> <p>Segment I: Likely. Suitable habitat exists in California Annual Grassland and Scrub Oak Chaparral; elevation is appropriate; and species is known within 10 miles of segment.</p>	<p>Segment K: Absent. No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment.</p>	<p>Segment J: Absent. No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment.</p>

Scientific Name Common Name ¹	Habitat Requirements ²	Flowering period ²			
			Segment 3	Reconductoring	New 230kV Circuit
<i>Calochortus clavatus</i> var. <i>clavatus</i> club-haired mariposa lily	Chaparral, cismontane woodland, coastal scrub, valley and foothill grassland. 245 - 4,265 feet.	May – June	<p>able habitat exists in elevation is not known within 10 miles of segment.</p> <p>able habitat exists in Mojave Creosote appropriate; and species of segment.</p> <p>able habitat exists (F2 grassland; elevation is not known within 10 miles of segment).</p> <p>able habitat exists in Chamise Chaparral, Scrub Oak Chaparral; species is not known</p>	<p>Segment K: Possible. Suitable habitat exists in Riversidian Sage Scrub and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.</p>	<p>Segment J: Possible. Suitable habitat exists in Chamise Chaparral and Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment.</p>
<i>Calochortus clavatus</i> var. <i>gracilis</i> slender mariposa lily	Chaparral, coastal scrub, and valley and foothill grassland. 1,200 - 3,330 feet	March – June	<p>able habitat exists in elevation is not known within 10 miles of segment.</p> <p>able habitat exists in Mojave Creosote appropriate; species is not known; and species is in the Piute Ranges (Aspen)</p> <p>able habitat exists (F2 grassland; elevation is not known within 10 miles of segment north of the 2009, USDA 2010a).</p> <p>able habitat exists in Chamise Chaparral, Scrub Oak Chaparral; species is known</p>	<p>Segment K: Likely. Suitable habitat exists in Riversidian Sage Scrub and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.</p>	<p>Segment J: Likely. Suitable habitat exists in Chamise Chaparral and Riversidian Sage Scrub; elevation is appropriate; and species is known within 10 miles of segment.</p>
<i>Calochortus palmeri</i> var. <i>palmeri</i> Palmer's mariposa lily	Chaparral, lower montane coniferous forest, meadows, and seeps; mesic soils. 3,300 - 7,200 feet	April – July	<p>able habitat exists; elevation is known within 10 miles of segment.</p> <p>able habitat exists; elevation is known within 10 miles of segment.</p> <p>able habitat exists; species is not known</p> <p>able habitat exists in Scrub Oak Chaparral; species is not known</p>	<p>Segment K: Unlikely. Suitable habitat exists in Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.</p>	<p>Segment J: Unlikely. Suitable habitat exists in Chamise Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.</p>

Scientific Name Common Name ¹	Habitat Requirements ²	Flowering period ²	Conservation Status ³	Potential for Occurrence within the Project Area ⁴					
				Alternative 1	Alternative 2	Alternative 2a	Alternative 3	Reconductoring	New 230kV Circuit
<i>Botrychium crenulatum</i> scalloped moonwort	Bogs and fens, lower montane coniferous forest, meadows and seeps, and marshes and swamps. 5,000 - 10,765 feet	June – July	Fed: None CA: None CNPS: 2.2 USFS: Sensitive	Segment A: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. Segment C: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. Segment D: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment A: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. Segment B: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. Segment G: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment A: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. Segment B: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. Segment G: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. Segment 2a: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment A: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. Segment B: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. Segment F: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. Segment I: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment K: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment J: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.
<i>Brodiaea filifolia</i> thread-leaved brodiaea	Inland valley and foothill habitats: coastal sage scrub, chaparral, seeps, annual grasslands; clay, loamy sand, or alkaline silt-clay soils. 75 - 3,660 feet	May – June	Fed: FT CA: SE CNPS: 1B.1	Segment A: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. Segment C: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. Segment D: Possible. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Mojave Creosote Bush Scrub, Riverside Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment A: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. Segment B: Possible. Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. Segment G: Possible. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riverside Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment A: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. Segment B: Possible. Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. Segment G: Possible. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riverside Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. Segment 2a: Possible. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment A: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. Segment B: Possible. Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. Segment F: Possible. Suitable habitat exists (F2 part) in California Annual Grassland; elevation is appropriate; and species is not known within 10 miles of segment. Segment I: Possible. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riverside Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment K: Possible. Suitable habitat exists in Riverside Sage Scrub and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment J: Possible. Suitable habitat exists in Chamise Chaparral and Riverside Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
<i>California macrophylla</i> round-leaved filaree	Cismontane woodlands and valley and foothill grasslands in clay soils. 49 to 3,937 feet	March – May	Fed: None CA: None CNPS: 1B.1	Segment A: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. Segment C: Absent. No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment. Segment D: Likely. Suitable habitat exists in California Annual Grassland; elevation is appropriate; and species is known within 10 miles of segment.	Segment A: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. Segment B: Likely. Suitable habitat exists in California Annual Grassland; elevation is appropriate; and species is known within 10 miles of segment. Segment G: Likely. Suitable habitat exists in California Annual Grassland; elevation is appropriate; and species is known within 10 miles of segment.	Segment A: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. Segment B: Likely. Suitable habitat exists in California Annual Grassland; elevation is appropriate; and species is known within 10 miles of segment. Segment G: Likely. Suitable habitat exists in California Annual Grassland; elevation is appropriate; and species is known within 10 miles of segment. Segment 2a: Likely. Suitable habitat exists in Interior Live Oak Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is known within 10 miles of segment.	Segment A: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. Segment B: Likely. Suitable habitat exists in California Annual Grassland; elevation is appropriate; and species is known within 10 miles of segment. Segment F: Likely. Suitable habitat exists (F2 part) in California Annual Grassland; elevation is appropriate; and species is known within 10 miles of segment. Segment I: Likely. Suitable habitat exists in California Annual Grassland and Scrub Oak Chaparral; elevation is appropriate; and species is known within 10 miles of segment.	Segment K: Absent. No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment.	Segment J: Absent. No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment.

Scientific Name Common Name ¹	Habitat Requirements ²	Flowering period ²	Conservation Status ³	Potential for Occurrence within the Project Area ⁴					
				Alternative 1	Alternative 2	Alternative 2a	Alternative 3	Reconductoring	New 230kV Circuit
<i>Calochortus clavatus</i> var. <i>clavatus</i> club-haired mariposa lily	Chaparral, cismontane woodland, coastal scrub, valley and foothill grassland. 245 - 4,265 feet.	May – June	Fed: None CA: None CNPS: 4.3	Segment A: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. Segment C: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. Segment D: Possible. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Mojave Creosote Bush Scrub, Riverside Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment A: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. Segment B: Possible. Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. Segment G: Possible. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riverside Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment A: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. Segment B: Possible. Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. Segment G: Possible. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riverside Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. Segment 2a: Possible. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment A: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. Segment B: Possible. Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. Segment F: Possible. Suitable habitat exists (F2 part) in California Annual Grassland; elevation is appropriate; and species is not known within 10 miles of segment. Segment I: Possible. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riverside Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment K: Possible. Suitable habitat exists in Riverside Sage Scrub and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment J: Possible. Suitable habitat exists in Chamise Chaparral and Riverside Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
<i>Calochortus clavatus</i> var. <i>gracilis</i> slender mariposa lily	Chaparral, coastal scrub, and valley and foothill grassland. 1,200 - 3,330 feet	March – June	Fed: None CA: None CNPS: 1B.2 USFS: Sensitive	Segment A: Unlikely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; segment is outside of species' known range and species is not known within 10 miles of segment. Segment C: Unlikely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; species is known within 10 miles of segment; and species is not known north of the Transverse Ranges (Aspen 2009, USDA 2010a). Segment D: Present. Species known within segment corridor. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Mojave Creosote Bush Scrub, Riverside Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.	Segment A: Unlikely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; segment is outside of species' known range and species is not known within 10 miles of segment. Segment B: Unlikely. Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; species is known within 10 miles of segment; and species is not known north of the Transverse Ranges (Aspen 2009, USDA 2010a) Segment G: Present. Species known within segment corridor. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riverside Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.	Segment A: Unlikely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; segment is outside of species' known range and species is not known within 10 miles of segment. Segment B: Unlikely. Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; species is known within 10 miles of segment; and species is not known north of the Transverse Ranges (Aspen 2009, USDA 2010a) Segment G: Present. Species known within segment corridor. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riverside Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment. Segment 2a: Likely. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.	Segment A: Unlikely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; segment is outside of species' known range and species is not known within 10 miles of segment. Segment B: Unlikely. Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; species is known within 10 miles of segment; and species is not known north of the Transverse Ranges (Aspen 2009, USDA 2010a). Segment F: Unlikely. Suitable habitat exists (F2 part) in California Annual Grassland; elevation is appropriate; species is not known within 10 miles of segment; and species is not known north of the Transverse Ranges (Aspen 2009, USDA 2010a). Segment I: Present. Species known within segment corridor. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riverside Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is known within 10 miles of segment.	Segment K: Likely. Suitable habitat exists in Riverside Sage Scrub and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.	Segment J: Likely. Suitable habitat exists in Chamise Chaparral and Riverside Sage Scrub; elevation is appropriate; and species is known within 10 miles of segment.
<i>Calochortus palmeri</i> var. <i>palmeri</i> Palmer's mariposa lily	Chaparral, lower montane coniferous forest, meadows, and seeps; mesic soils. 3,300 - 7,200 feet	April – July	Fed: None CA: None CNPS: 1B.2 USFS: Sensitive	Segment A: Absent. No suitable habitat exists; elevation is appropriate; species is known within 10 miles of segment. Segment C: Absent. No suitable habitat exists; elevation is appropriate; species is known within 10 miles of segment. Segment D: Possible. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment A: Absent. No suitable habitat exists; elevation is appropriate; species is known within 10 miles of segment. Segment B: Absent. No suitable habitat exists; elevation is appropriate; species is known within 10 miles of segment. Segment G: Likely. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.	Segment A: Absent. No suitable habitat exists; elevation is appropriate; species is known within 10 miles of segment. Segment B: Absent. No suitable habitat exists; elevation is appropriate; species is known within 10 miles of segment. Segment G: Likely. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment. Segment 2a: Possible. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment A: Absent. No suitable habitat exists; elevation is appropriate; species is known within 10 miles of segment. Segment B: Absent. No suitable habitat exists; elevation is appropriate; species is known within 10 miles of segment. Segment F: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. Segment I: Possible. Suitable habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment K: Unlikely. Suitable habitat exists in Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.	Segment J: Unlikely. Suitable habitat exists in Chamise Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.

Potential for Occurrence within the Project Area ⁴				
	Alternative 2a	Alternative 3	Reconductoring	New 230kV Circuit
abitat scrub; es is ent. tat and es is abitat ssland, Sage chaparral; cies is	<p>Segment A: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment.</p> <p>Segment B: Likely. Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment.</p> <p>Segment G: Likely. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riverside Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.</p> <p>Segment 2a: Possible. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.</p>	<p>Segment A: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment.</p> <p>Segment B: Likely. Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment.</p> <p>Segment F: Possible. Suitable habitat exists (F2 part) in California Annual Grassland; elevation is appropriate; and species is not known within 10 miles of segment.</p> <p>Segment I: Likely. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riverside Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is known within 10 miles of segment.</p>	<p>Segment K: Likely. Suitable habitat exists in Riverside Sage Scrub and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.</p>	<p>Segment J: Likely. Suitable habitat exists in Chamise Chaparral and Riverside Sage Scrub; elevation is appropriate; and species is known within 10 miles of segment.</p>
at nd vation wn at nd vation wn abitat nd ation is within	<p>Segment A: Likely. Suitable habitat exists in Joshua Tree Woodland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment.</p> <p>Segment B: Likely. Suitable habitat exists in Joshua Tree Woodland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment.</p> <p>Segment G: Likely. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.</p> <p>Segment 2a: Likely. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.</p>	<p>Segment A: Likely. Suitable habitat exists in Joshua Tree Woodland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment.</p> <p>Segment B: Likely. Suitable habitat exists in Joshua Tree Woodland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment.</p> <p>Segment F: Absent. No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment.</p> <p>Segment I: Likely. Suitable habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is known within 10 miles of segment.</p>	<p>Segment K: Likely. Suitable habitat exists in Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.</p>	<p>Segment J: Possible. Suitable habitat exists in Chamise Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.</p>
iate; 0 miles iate; 0 miles abitat nd ation is known	<p>Segment A: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.</p> <p>Segment B: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.</p> <p>Segment G: Possible. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.</p> <p>Segment 2a: Possible. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.</p>	<p>Segment A: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.</p> <p>Segment B: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.</p> <p>Segment F: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.</p> <p>Segment I: Possible. Suitable habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.</p>	<p>Segment K: Possible. Suitable habitat exists in Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.</p>	<p>Segment J: Possible. Suitable habitat exists in Chamise Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.</p>

Scientific Name Common Name ¹	Habitat Requirements ²	Flowering period ²			
			Segment 3	Reconductoring	New 230kV Circuit
<i>Calystegia peirsonii</i> Peirson's morning-glory	Chaparral, chenopod scrub, cismontane woodland, coastal scrub, lower montane coniferous forest, valley and foothill grassland. 1,000 - 4,500 feet	April – June	able habitat exists in elevation is not known within 10 miles habitat exists in Mojave and Mojave Creosote scrub; appropriate; and species is known. habitat exists (F2) in Mojave woodland; elevation is not known within 10 miles habitat exists in Chamise Chaparral, Scrub Oak Chaparral; species is known	Segment K: Likely. Suitable habitat exists in Riversidian Sage Scrub and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.	Segment J: Likely. Suitable habitat exists in Chamise Chaparral and Riversidian Sage Scrub; elevation is appropriate; and species is known within 10 miles of segment.
<i>Canbya candida</i> white pygmy-poppy	Joshua tree woodland, Mojavean desert scrub, pinyon and juniper woodland; sandy, granitic soils. 1,970 - 3,940 feet	March – June	habitat exists in Mojave Creosote Bush scrub; elevation is not known within 10 miles habitat exists in Mojave Creosote Bush scrub; and species is not known. habitable habitat exists; species is known habitable habitat exists; species is known	Segment K: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.	Segment J: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.
<i>Castilleja gleasonii</i> Mt. Gleason Indian Paintbrush	Lower montane coniferous forest, pinyon and juniper woodland; granitic soils. 3,805 - 7,120 feet	May – June	habitable habitat exists; and species is not known. habitable habitat exists; species is not known habitable habitat exists; species is not known habitable habitat exists; species is not known	Segment K: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment J: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.

Scientific Name Common Name ¹	Habitat Requirements ²	Flowering period ²	Conservation Status ³	Potential for Occurrence within the Project Area ⁴					
				Alternative 1	Alternative 2	Alternative 2a	Alternative 3	Reconductoring	New 230kV Circuit
<i>Calochortus plummerae</i> Plummer's mariposa lily	Coastal scrub, chaparral, cismontane woodland, lower montane coniferous forest, valley and foothill grassland; alluvial or granitic, rocky or sandy soils. 325 - 5,580 feet	May – July	Fed: None CA: None CNPS: 1B.2 USFS Sensitive	Segment A: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. Segment C: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. Segment D: Likely. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Mojave Creosote Bush Scrub, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.	Segment A: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. Segment B: Likely. Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. Segment G: Likely. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.	Segment A: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. Segment B: Likely. Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. Segment G: Likely. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment. Segment 2a: Possible. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment A: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. Segment B: Likely. Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. Segment F: Possible. Suitable habitat exists (F2 part) in California Annual Grassland; elevation is appropriate; and species is not known within 10 miles of segment. Segment I: Likely. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is known within 10 miles of segment.	Segment K: Likely. Suitable habitat exists in Riversidian Sage Scrub and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.	Segment J: Likely. Suitable habitat exists in Chamise Chaparral and Riversidian Sage Scrub; elevation is appropriate; and species is known within 10 miles of segment.
<i>Calochortus striatus</i> alkali mariposa lily	Alkaline, mesic sites within chaparral, chenopod and Mojavean desert scrub; meadows and seeps. 300 - 4,500 feet	April – June	Fed: None CA: None CNPS: 1B.2 USFS: Sensitive BLM: SS	Segment A: Likely. Suitable habitat exists in Joshua Tree Woodland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. Segment C: Likely. Suitable habitat exists in Joshua Tree Woodland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. Segment D: Possible. Suitable habitat exists in Joshua Tree Woodland, Chamise Chaparral, Mojave Creosote Bush Scrub, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment A: Likely. Suitable habitat exists in Joshua Tree Woodland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. Segment B: Likely. Suitable habitat exists in Joshua Tree Woodland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. Segment G: Likely. Suitable habitat exists in Joshua Tree Woodland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment.	Segment A: Likely. Suitable habitat exists in Joshua Tree Woodland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. Segment B: Likely. Suitable habitat exists in Joshua Tree Woodland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. Segment G: Likely. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment. Segment 2a: Likely. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.	Segment A: Likely. Suitable habitat exists in Joshua Tree Woodland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. Segment B: Likely. Suitable habitat exists in Joshua Tree Woodland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. Segment F: Absent. No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment. Segment I: Likely. Suitable habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is known within 10 miles of segment.	Segment K: Likely. Suitable habitat exists in Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment J: Possible. Suitable habitat exists in Chamise Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
<i>Calochortus weedii</i> var. <i>vestus</i> late-flowered mariposa lily	Chaparral, cismontane woodland, and riparian woodland. 880 - 6,250 feet	June – August	Fed: None CA: None CNPS: 1B.2 USFS: Sensitive	Segment A: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. Segment C: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. Segment D: Possible. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment A: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. Segment B: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. Segment G: Possible. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment A: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. Segment B: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. Segment G: Possible. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. Segment 2a: Possible. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment A: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. Segment B: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. Segment F: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. Segment I: Possible. Suitable habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment K: Possible. Suitable habitat exists in Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment J: Possible. Suitable habitat exists in Chamise Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Scientific Name Common Name ¹	Habitat Requirements ²	Flowering period ²	Conservation Status ³	Potential for Occurrence within the Project Area ⁴					
				Alternative 1	Alternative 2	Alternative 2a	Alternative 3	Reconductoring	New 230kV Circuit
<i>Calystegia peirsonii</i> Peirson's morning-glory	Chaparral, chenopod scrub, cismontane woodland, coastal scrub, lower montane coniferous forest, valley and foothill grassland. 1,000 - 4,500 feet	April – June	Fed: None CA: None CNPS: 4.2	Segment A: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. Segment C: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. Segment D: Likely. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Mojave Creosote Bush Scrub, Riverside Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.	Segment A: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. Segment B: Likely. Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. Segment G: Likely. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riverside Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.	Segment A: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. Segment B: Likely. Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. Segment G: Likely. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riverside Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment. Segment 2a: Likely. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.	Segment A: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. Segment B: Likely. Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. Segment F: Likely. Suitable habitat exists (F2 part) in California Annual Grassland; elevation is appropriate; and species is known within 10 miles of segment. Segment I: Likely. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riverside Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is known within 10 miles of segment.	Segment K: Likely. Suitable habitat exists in Riverside Sage Scrub and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.	Segment J: Likely. Suitable habitat exists in Chamise Chaparral and Riverside Sage Scrub; elevation is appropriate; and species is known within 10 miles of segment.
<i>Canbya candida</i> white pygmy-poppy	Joshua tree woodland, Mojavean desert scrub, pinyon and juniper woodland; sandy, granitic soils. 1,970 - 3,940 feet	March – June	Fed: None CA: None CNPS: 4.2 USFS: Sensitive	Segment A: Likely. Suitable habitat exists in Joshua Tree Woodland, Mojave Creosote Bush Scrub, and Mojave Wash Scrub; elevation is appropriate; and species is known within 10 miles of segment. Segment C: Likely. Suitable habitat exists in Joshua Tree Woodland, Mojave Creosote Bush Scrub, and Mojave Wash Scrub; elevation is appropriate; and species is known within 10 miles of segment. Segment D: Possible. Suitable habitat exists in Joshua Tree Woodland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment.	Segment A: Likely. Suitable habitat exists in Joshua Tree Woodland, Mojave Creosote Bush Scrub, and Mojave Wash Scrub; elevation is appropriate; and species is known within 10 miles of segment. Segment B: Likely. Suitable habitat exists in Joshua Tree Woodland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. Segment G: Absent. No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment.	Segment A: Likely. Suitable habitat exists in Joshua Tree Woodland, Mojave Creosote Bush Scrub, and Mojave Wash Scrub; elevation is appropriate; and species is known within 10 miles of segment. Segment B: Likely. Suitable habitat exists in Joshua Tree Woodland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. Segment G: Absent. No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment. Segment 2a: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.	Segment A: Likely. Suitable habitat exists in Joshua Tree Woodland, Mojave Creosote Bush Scrub, and Mojave Wash Scrub; elevation is appropriate; and species is known within 10 miles of segment. Segment B: Likely. Suitable habitat exists in Joshua Tree Woodland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. Segment F: Absent. No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment. Segment I: Absent. No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment.	Segment K: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.	Segment J: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.
<i>Castilleja gleasonii</i> Mt. Gleason Indian Paintbrush	Lower montane coniferous forest, pinyon and juniper woodland; granitic soils. 3,805 - 7,120 feet	May – June	Fed: None CA: SR CNPS: 1B.2 USFS: Sensitive	Segment A: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. Segment C: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. Segment D: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment A: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. Segment B: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. Segment G: Absent. No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment. Segment 2a: Absent. No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment.	Segment A: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. Segment B: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. Segment G: Absent. No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment. Segment 2a: Absent. No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment.	Segment A: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. Segment B: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. Segment F: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. Segment I: Absent. No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment.	Segment K: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment J: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.

Potential for Occurrence within the Project Area ⁴				
	Alternative 2a	Alternative 3	Reconductoring	New 230kV Circuit
abitat es is ent. abitat es is ent. iate; 0 miles	<p>Segment A: Possible. Suitable habitat exists in Joshua Tree Woodland; elevation is appropriate; and species is not known within 10 miles of segment.</p> <p>Segment B: Possible. Suitable habitat exists in Joshua Tree Woodland; elevation is appropriate; and species is not known within 10 miles of segment.</p> <p>Segment G: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.</p> <p>Segment 2a: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.</p>	<p>Segment A: Possible. Suitable habitat exists in Joshua Tree Woodland; elevation is appropriate; and species is not known within 10 miles of segment.</p> <p>Segment B: Possible. Suitable habitat exists in Joshua Tree Woodland; elevation is appropriate; and species is not known within 10 miles of segment.</p> <p>Segment F: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.</p> <p>Segment I: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.</p>	<p>Segment K: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.</p>	<p>Segment J: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.</p>
own abitat and; es is at and; s	<p>Segment A: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment.</p> <p>Segment B: Possible. Suitable habitat exists in California Annual Grassland; elevation is not appropriate; species is known within 10 miles of segment.</p> <p>Segment G: Likely. Suitable habitat exists in California Annual Grassland; elevation is appropriate; species is known within 10 miles of segment.</p> <p>Segment 2a: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.</p>	<p>Segment A: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment.</p> <p>Segment B: Possible. Suitable habitat exists in California Annual Grassland; elevation is not appropriate; species is known within 10 miles of segment.</p> <p>Segment F: Unlikely. Suitable habitat exists in California Annual Grassland; elevation is not appropriate; species is not known within 10 miles of segment.</p> <p>Segment I: Likely. Suitable habitat exists in California Annual Grassland; elevation is appropriate; species is known within 10 miles of segment.</p>	<p>Segment K: Absent. No suitable habitat exists; elevation is appropriate; species is known within 10 miles of segment.</p>	<p>Segment J: Absent. No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment.</p>
abitat crub; ies is ent. at crub; ies is at ies is t.	<p>Segment A: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment.</p> <p>Segment B: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment.</p> <p>Segment G: Likely. Suitable habitat exists in Riverside Sage Scrub; elevation is appropriate; and species is known within 10 miles of segment.</p> <p>Segment 2a: Absent. No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment.</p>	<p>Segment A: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment.</p> <p>Segment B: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment.</p> <p>Segment F: Absent. No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment.</p> <p>Segment I: Likely. Suitable habitat exists in Riverside Sage Scrub; elevation is appropriate; and species is known within 10 miles of segment.</p>	<p>Segment K: Likely. Suitable habitat exists in Riverside Sage Scrub; elevation is appropriate; and species is known within 10 miles of segment.</p>	<p>Segment J: Likely. Suitable habitat exists in Riverside Sage Scrub; elevation is appropriate; and species is known within 10 miles of segment.</p>

Scientific Name Common Name ¹	Habitat Requirements ²	Flowering period ²			
			Segment 3	Reconductoring	New 230kV Circuit
<i>Chorizanthe parryi</i> var. <i>parryi</i> Parry's spineflower	Chaparral, coastal scrub; sandy or rocky openings. 100 - 3,700 feet	April – June	<p>able habitat exists in ; elevation is not known within 10 miles of segment.</p> <p>able habitat exists in ; elevation is known within 10 miles of segment. No suitable habitat exists; and species is not known within 10 miles of segment.</p> <p>able habitat exists in ; elevation is known within 10 miles of segment. No suitable habitat exists; and species is not known within 10 miles of segment.</p>	<p>Segment K: Likely. Suitable habitat exists in Riversidian Sage Scrub and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.</p>	<p>Segment J: Likely. Suitable habitat exists in Chamise Chaparral and Riversidian Sage Scrub; elevation is appropriate; and species is known within 10 miles of segment.</p>
<i>Chorizanthe xanti</i> var. <i>leucotheca</i> White-bracted spineflower	Mojavean desert scrub and pinyon and juniper woodland; sandy or gravelly soils. 984 – 3,937 feet	April – June	<p>able habitat exists in ; and Mojave Wash and species is not known within 10 miles of segment.</p> <p>able habitat exists in ; elevation is known within 10 miles of segment.</p> <p>able habitat exists; species is known within 10 miles of segment.</p> <p>able habitat exists; species is known within 10 miles of segment.</p>	<p>Segment K: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.</p>	<p>Segment J: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.</p>
<i>Claytonia lanceolata</i> var. <i>peirsonii</i> Peirson's beauty	Subalpine coniferous forest, upper montane coniferous forest; on scree. 7,005 - 9,005 feet	May – June	<p>able habitat exists; and species is not known within 10 miles of segment.</p> <p>able habitat exists; species is not known within 10 miles of segment.</p> <p>able habitat exists; species is not known within 10 miles of segment.</p> <p>able habitat exists; species is not known within 10 miles of segment.</p>	<p>Segment K: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.</p>	<p>Segment J: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.</p>

Scientific Name Common Name ¹	Habitat Requirements ²	Flowering period ²	Conservation Status ³	Potential for Occurrence within the Project Area ⁴					
				Alternative 1	Alternative 2	Alternative 2a	Alternative 3	Reconductoring	New 230kV Circuit
<i>Castilleja</i> Mojave paintbrush <i>plagiotoma</i> Indian	Great Basin scrub, Joshua tree woodland, lower montane coniferous forest, pinyon and juniper woodland. 1,000 - 8,325 feet	April – June	Fed: None CA: None CNPS: 4.3 USFS: Sensitive	Segment A: Possible. Suitable habitat exists in Joshua Tree Woodland; elevation is appropriate; and species is not known within 10 miles of segment. Segment C: Possible. Suitable habitat exists in Joshua Tree Woodland and Rabbitbrush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. Segment D: Possible. Suitable habitat exists in Joshua Tree Woodland and Rabbitbrush Scrub; elevation is appropriate; and species is not known within 10 miles of segment.	Segment A: Possible. Suitable habitat exists in Joshua Tree Woodland; elevation is appropriate; and species is not known within 10 miles of segment. Segment B: Possible. Suitable habitat exists in Joshua Tree Woodland; elevation is appropriate; and species is not known within 10 miles of segment. Segment G: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.	Segment A: Possible. Suitable habitat exists in Joshua Tree Woodland; elevation is appropriate; and species is not known within 10 miles of segment. Segment B: Possible. Suitable habitat exists in Joshua Tree Woodland; elevation is appropriate; and species is not known within 10 miles of segment. Segment G: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. Segment 2a: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.	Segment A: Possible. Suitable habitat exists in Joshua Tree Woodland; elevation is appropriate; and species is not known within 10 miles of segment. Segment B: Possible. Suitable habitat exists in Joshua Tree Woodland; elevation is appropriate; and species is not known within 10 miles of segment. Segment F: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. Segment I: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.	Segment K: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.	Segment J: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.
<i>Centromadia</i> <i>ssp. australis</i> southern tarplant <i>parryi</i>	Vernal pools, vernally mesic valley and foothill grassland, marshes and swamps. 0 – 1401 feet	May – November	Fed: None CA: None CNPS: 1B.1	Segment A: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. Segment C: Absent. No suitable habitat exists; elevation is not appropriate; and species is known within 10 miles of segment. Segment D: Possible. Suitable habitat exists in California Annual Grassland; elevation is appropriate; species is not known within 10 miles of segment.	Segment A: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. Segment B: Possible. Suitable habitat exists in California Annual Grassland; elevation is not appropriate; species is known within 10 miles of segment. Segment G: Likely. Suitable habitat exists in California Annual Grassland; elevation is appropriate; species is known within 10 miles of segment.	Segment A: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. Segment B: Possible. Suitable habitat exists in California Annual Grassland; elevation is not appropriate; species is known within 10 miles of segment. Segment G: Likely. Suitable habitat exists in California Annual Grassland; elevation is appropriate; species is known within 10 miles of segment. Segment 2a: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment A: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. Segment B: Possible. Suitable habitat exists in California Annual Grassland; elevation is not appropriate; species is known within 10 miles of segment. Segment F: Unlikely. Suitable habitat exists in California Annual Grassland; elevation is not appropriate; species is not known within 10 miles of segment. Segment I: Likely. Suitable habitat exists in California Annual Grassland; elevation is appropriate; species is known within 10 miles of segment.	Segment K: Absent. No suitable habitat exists; elevation is appropriate; species is known within 10 miles of segment.	Segment J: Absent. No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment.
<i>Chorizanthe</i> <i>parryi</i> var. <i>fernandina</i> San Fernando Valley spineflower	Coastal scrub; sandy soils. 490 - 4,000 feet	April – July	Fed: FC CA: SE CNPS: 1B.1 USFS: Sensitive	Segment A: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. Segment C: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. Segment D: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub and Riversidean Sage Scrub; elevation is appropriate; and species is known within 10 miles of segment.	Segment A: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. Segment B: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. Segment G: Likely. Suitable habitat exists in Riversidean Sage Scrub; elevation is appropriate; and species is known within 10 miles of segment.	Segment A: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. Segment B: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. Segment G: Likely. Suitable habitat exists in Riversidean Sage Scrub; elevation is appropriate; and species is known within 10 miles of segment. Segment 2a: Absent. No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment.	Segment A: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. Segment B: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. Segment F: Absent. No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment. Segment I: Likely. Suitable habitat exists in Riversidean Sage Scrub; elevation is appropriate; and species is known within 10 miles of segment.	Segment K: Likely. Suitable habitat exists in Riversidean Sage Scrub; elevation is appropriate; and species is known within 10 miles of segment.	Segment J: Likely. Suitable habitat exists in Riversidean Sage Scrub; elevation is appropriate; and species is known within 10 miles of segment.

Scientific Name Common Name ¹	Habitat Requirements ²	Flowering period ²	Conservation Status ³	Potential for Occurrence within the Project Area ⁴					
				Alternative 1	Alternative 2	Alternative 2a	Alternative 3	Reconductoring	New 230kV Circuit
<i>Chorizanthe parryi</i> var. <i>parryi</i> Parry's spineflower	Chaparral, coastal scrub; sandy or rocky openings. 100 - 3,700 feet	April – June	Fed: None CA: None CNPS: 1B.1 USFS: Sensitive	Segment A: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. Segment C: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. Segment D: Likely. Suitable habitat exists in Chamise Chaparral, Mojave Creosote Bush Scrub, Riverside Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.	Segment A: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. Segment B: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. Segment G: Likely. Suitable habitat exists in Chamise Chaparral, Riverside Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.	Segment A: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. Segment B: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. Segment G: Likely. Suitable habitat exists in Chamise Chaparral, Riverside Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment. Segment 2a: Likely. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.	Segment A: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. Segment B: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. Segment F: Absent. No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment. Segment I: Likely. Suitable habitat exists in Chamise Chaparral, Riverside Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is known within 10 miles of segment.	Segment K: Likely. Suitable habitat exists in Riverside Sage Scrub and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.	Segment J: Likely. Suitable habitat exists in Chamise Chaparral and Riverside Sage Scrub; elevation is appropriate; and species is known within 10 miles of segment.
<i>Chorizanthe xanti</i> var. <i>leucotheca</i> White-bracted spineflower	Mojavean desert scrub and pinyon and juniper woodland; sandy or gravelly soils. 984 – 3,937 feet	April – June	Fed: None CA: None CNPS: 1B.2	Segment A: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub, and Mojave Wash Scrub; elevation is appropriate; and species is not known within 10 miles of segment. Segment C: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub and Mojave Wash Scrub; elevation is appropriate; and species is known within 10 miles of segment. Segment D: Unlikely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment.	Segment A: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub, and Mojave Wash Scrub; elevation is appropriate; and species is not known within 10 miles of segment. Segment B: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. Segment G: Absent. No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment.	Segment A: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub, and Mojave Wash Scrub; elevation is appropriate; and species is not known within 10 miles of segment. Segment B: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. Segment G: Absent. No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment. Segment 2a: Absent. No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment.	Segment A: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub, and Mojave Wash Scrub; elevation is appropriate; and species is not known within 10 miles of segment. Segment B: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. Segment F: Absent. No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment. Segment I: Absent. No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment.	Segment K: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.	Segment J: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.
<i>Claytonia lanceolata</i> var. <i>peirsonii</i> Peirson's spring beauty	Subalpine coniferous forest, upper montane coniferous forest, on scree. 7,005 - 9,005 feet	May – June	Fed: None CA: None CNPS: 1B.1 USFS: Sensitive	Segment A: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. Segment C: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. Segment D: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment.	Segment A: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. Segment B: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. Segment G: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment A: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. Segment B: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. Segment G: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. Segment 2a: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment A: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. Segment B: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. Segment F: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. Segment I: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment K: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment J: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.

Potential for Occurrence within the Project Area⁴

	Alternative 2a	Alternative 3	Reconductoring	New 230kV Circuit
habitat Mojave e iate; 10 miles	<p>Segment A: Possible. Suitable habitat exists in Joshua Tree Woodland, Mojave Creosote Bush Scrub, and Mojave Wash Scrub; elevation is appropriate; and species is not known within 10 miles of segment.</p> <p>Segment B: Possible. Suitable habitat exists in Joshua Tree Woodland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment.</p> <p>Segment G: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.</p> <p>Segment 2a: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.</p>	<p>Segment A: Possible. Suitable habitat exists in Joshua Tree Woodland, Mojave Creosote Bush Scrub, and Mojave Wash Scrub; elevation is appropriate; and species is not known within 10 miles of segment.</p> <p>Segment B: Possible. Suitable habitat exists in Joshua Tree Woodland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment.</p> <p>Segment F: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.</p> <p>Segment I: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.</p>	<p>Segment K: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.</p>	<p>Segment J: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.</p>
abitat Scrub, on is n within	<p>Segment A: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub, and Mojave Wash Scrub; elevation is appropriate; and species is known within 10 miles of segment.</p> <p>Segment B: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment.</p> <p>Segment G: Absent. No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment.</p> <p>Segment 2a: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.</p>	<p>Segment A: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub, and Mojave Wash Scrub; elevation is appropriate; and species is known within 10 miles of segment.</p> <p>Segment B: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment.</p> <p>Segment F: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.</p> <p>Segment I: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.</p>	<p>Segment K: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.</p>	<p>Segment J: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.</p>
e ropriate; 10 miles	<p>Segment A: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.</p> <p>Segment B: Absent. No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment.</p> <p>Segment G: Likely. Suitable habitat exists in Chamise Chaparral, Riverside Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.</p> <p>Segment 2a: Possible. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.</p>	<p>Segment A: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.</p> <p>Segment B: Absent. No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment.</p> <p>Segment F: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.</p> <p>Segment I: Possible. Suitable habitat exists in Chamise Chaparral, Riverside Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.</p>	<p>Segment K: Possible. Suitable habitat exists in Riverside Sage Scrub and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.</p>	<p>Segment J: Possible. Suitable habitat exists in Chamise Chaparral and Riverside Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment.</p>

Scientific Name Common Name ¹	Habitat Requirements ²	Flowering period ²			
			Segment 3	Reconductoring	New 230kV Circuit
<i>Deinandra mohavensis</i> Mojave tarplant	Chaparral, coastal scrub, and riparian scrub; mesic soils. 2,950 - 4,600 feet	July – October (January is unusual)	<p>habitat exists in ; elevation is known within 10 miles</p> <p>habitat exists in ; elevation is known within 10 miles</p> <p>able habitat exists; species is known</p> <p>le habitat exists in ian Sage Scrub, and on is appropriate; and 0 miles of segment.</p>	<p>Segment K: Unlikely. Suitable habitat exists in Riversidian Sage Scrub and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.</p>	<p>Segment J: Possible. Suitable habitat exists in Chamise Chaparral and Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment.</p>
<i>Dodecahema leptoceras</i> slender-horned spineflower	Coastal scrub (alluvial fans), chaparral, and cismontane woodlands; sandy soils. 650 - 2,500 feet	April – June	<p>ble habitat exists in ; elevation is not known within 10</p> <p>habitat exists in and Mojave Creosote appropriate; and species segment.</p> <p>ble habitat exists (F2 ssland; elevation is not known within 10</p> <p>habitat exists in Chamise Chaparral, Scrub Oak Chaparral; species is known</p>	<p>Segment K: Likely. Suitable habitat exists in Riversidian Sage Scrub and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.</p>	<p>Segment J: Likely. Suitable habitat exists in Chamise Chaparral and Riversidian Sage Scrub; elevation is appropriate; and species is known within 10 miles of segment.</p>
<i>Dudleya blochmaniae</i> ssp. <i>blochmaniae</i> Blochman's dudleya	Coastal bluff scrub, chaparral, coastal scrub, and valley and foothill grassland. 16 – 1,476 feet	April – June	<p>able habitat exists; and species is not ment.</p> <p>ble habitat exists in elevation is not known within 10 miles</p> <p>le habitat exists in elevation is not known within 10</p> <p>le habitat exists in Chamise Chaparral, Scrub Oak Chaparral; species is not known</p>	<p>Segment K: Likely. Suitable habitat exists in Riversidian Sage Scrub and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.</p>	<p>Segment J: Possible. Suitable habitat exists in Chamise Chaparral and Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment.</p>

Scientific Name Common Name ¹	Habitat Requirements ²	Flowering period ²	Conservation Status ³	Potential for Occurrence within the Project Area ⁴					
				Alternative 1	Alternative 2	Alternative 2a	Alternative 3	Reconductoring	New 230kV Circuit
<i>Cymopterus deserticola</i> desert cymopterus	Joshua tree woodland, Mojavean desert scrub, 2,000 – 5,000 feet.	March -May	Fed: None CA: None CNPS: 1B.2 BLM: SS	Segment A: Possible. Suitable habitat exists in Joshua Tree Woodland, Mojave Creosote Bush Scrub, and Mojave Wash Scrub; elevation is appropriate; and species is not known within 10 miles of segment. Segment C: Possible. Suitable habitat exists in Joshua Tree Woodland, Mojave Creosote Bush Scrub, and Mojave Wash Scrub; elevation is appropriate; and species is not known within 10 miles of segment. Segment D: Possible. Suitable habitat exists in Joshua Tree Woodland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment.	Segment A: Possible. Suitable habitat exists in Joshua Tree Woodland, Mojave Creosote Bush Scrub, and Mojave Wash Scrub; elevation is appropriate; and species is not known within 10 miles of segment. Segment B: Possible. Suitable habitat exists in Joshua Tree Woodland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. Segment G: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.	Segment A: Possible. Suitable habitat exists in Joshua Tree Woodland, Mojave Creosote Bush Scrub, and Mojave Wash Scrub; elevation is appropriate; and species is not known within 10 miles of segment. Segment B: Possible. Suitable habitat exists in Joshua Tree Woodland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. Segment G: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. Segment 2a: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.	Segment A: Possible. Suitable habitat exists in Joshua Tree Woodland, Mojave Creosote Bush Scrub, and Mojave Wash Scrub; elevation is appropriate; and species is not known within 10 miles of segment. Segment B: Possible. Suitable habitat exists in Joshua Tree Woodland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. Segment F: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. Segment I: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.	Segment K: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.	Segment J: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.
<i>Deinandra arida</i> Red Rock tarplant	Mojavean desert scrub; clay soils and volcanic tuff. 984 – 3,117 feet	April – November	Fed: None CA: None CNPS: 1B.2 BLM: SS	Segment A: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub, and Mojave Wash Scrub; elevation is appropriate; and species is known within 10 miles of segment. Segment C: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub and Mojave Wash Scrub; elevation is appropriate; and species is known within 10 miles of segment. Segment D: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment.	Segment A: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub, and Mojave Wash Scrub; elevation is appropriate; and species is known within 10 miles of segment. Segment B: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. Segment G: Absent. No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment.	Segment A: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub, and Mojave Wash Scrub; elevation is appropriate; and species is known within 10 miles of segment. Segment B: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. Segment G: Absent. No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment. Segment 2a: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.	Segment A: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub, and Mojave Wash Scrub; elevation is appropriate; and species is known within 10 miles of segment. Segment B: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. Segment F: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. Segment I: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.	Segment K: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.	Segment J: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.
<i>Deinandra minthomii</i> Santa Susana tarplant	Chaparral and coastal scrub. 919 – 2,493 feet	July – November	Fed: None CA: None CNPS: 1B.2	Segment A: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. Segment C: Absent. No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment. Segment D: Possible. Suitable habitat exists in Chamise Chaparral, Riversidean Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment A: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. Segment B: Absent. No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment. Segment G: Likely. Suitable habitat exists in Chamise Chaparral, Riversidean Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.	Segment A: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. Segment B: Absent. No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment. Segment G: Likely. Suitable habitat exists in Chamise Chaparral, Riversidean Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment. Segment 2a: Possible. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment A: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. Segment B: Absent. No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment. Segment F: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. Segment I: Possible. Suitable habitat exists in Chamise Chaparral, Riversidean Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment K: Possible. Suitable habitat exists in Riversidean Sage Scrub and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment J: Possible. Suitable habitat exists in Chamise Chaparral and Riversidean Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment.

Scientific Name Common Name ¹	Habitat Requirements ²	Flowering period ²	Conservation Status ³	Potential for Occurrence within the Project Area ⁴					
				Alternative 1	Alternative 2	Alternative 2a	Alternative 3	Reconductoring	New 230kV Circuit
<i>Deinandra mohavensis</i> Mojave tarplant	Chaparral, coastal scrub, and riparian scrub; mesic soils. 2,950 - 4,600 feet	July –October (January unusual)	Fed: None CA: None CNPS: 1B.3 USFS: Sensitive BLM: SS	Segment A: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. Segment C: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. Segment D: Possible. Suitable habitat exists in Chamise Chaparral, Mojave Creosote Bush Scrub, Riverside Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment A: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. Segment B: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. Segment G: Likely. Suitable habitat exists in Chamise Chaparral, Riverside Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.	Segment A: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. Segment B: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. Segment G: Likely. Suitable habitat exists in Chamise Chaparral, Riverside Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment. Segment 2a: Possible. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment A: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. Segment B: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. Segment F: Absent. No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment. Segment I: Possible. Suitable habitat exists in Chamise Chaparral, Riverside Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment K: Unlikely. Suitable habitat exists in Riverside Sage Scrub and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.	Segment J: Possible. Suitable habitat exists in Chamise Chaparral and Riverside Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
<i>Dodecahema leptoceras</i> slender-horned spineflower	Coastal scrub (alluvial fans), chaparral, and cismontane woodlands; sandy soils. 650 - 2,500 feet	April – June	Fed: FE CA: SE CNPS: 1B.1	Segment A: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. Segment C: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. Segment D: Likely. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Mojave Creosote Bush Scrub, Riverside Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.	Segment A: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. Segment B: Likely. Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. Segment G: Likely. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riverside Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.	Segment A: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. Segment B: Likely. Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. Segment G: Likely. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riverside Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment. Segment 2a: Likely. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.	Segment A: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. Segment B: Likely. Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. Segment F: Possible. Suitable habitat exists (F2 part) in California Annual Grassland; elevation is appropriate; and species is not known within 10 miles of segment. Segment I: Likely. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riverside Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is known within 10 miles of segment.	Segment K: Likely. Suitable habitat exists in Riverside Sage Scrub and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.	Segment J: Likely. Suitable habitat exists in Chamise Chaparral and Riverside Sage Scrub; elevation is appropriate; and species is known within 10 miles of segment.
<i>Dudleya blochmaniae</i> ssp. <i>blochmaniae</i> Blochman's dudleya	Coastal bluff scrub, chaparral, coastal scrub, and valley and foothill grassland. 16 – 1,476 feet	April – June	Fed: None CA: None CNPS: 1.B1	Segment A: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. Segment C: Absent. No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment. Segment D: Possible. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riverside Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment A: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. Segment B: Possible. Suitable habitat exists in California Annual Grassland; elevation is not appropriate; and species is known within 10 miles of segment. Segment G: Likely. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riverside Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.	Segment A: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. Segment B: Possible. Suitable habitat exists in California Annual Grassland; elevation is not appropriate; and species is known within 10 miles of segment. Segment G: Likely. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riverside Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment. Segment 2a: Unlikely. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.	Segment A: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. Segment B: Possible. Suitable habitat exists in California Annual Grassland; elevation is not appropriate; and species is known within 10 miles of segment. Segment F: Unlikely. Suitable habitat exists in California Annual Grassland; elevation is not appropriate; and species is not known within 10 miles of segment. Segment I: Possible. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riverside Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment K: Likely. Suitable habitat exists in Riverside Sage Scrub and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.	Segment J: Possible. Suitable habitat exists in Chamise Chaparral and Riverside Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment.

Potential for Occurrence within the Project Area ⁴				
	Alternative 2a	Alternative 3	Reconductoring	New 230kV Circuit
own within habitat and ation is known	<p>Segment A: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment.</p> <p>Segment B: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.</p> <p>Segment G: Possible. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.</p> <p>Segment 2a: Unlikely. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.</p>	<p>Segment A: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment.</p> <p>Segment B: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.</p> <p>Segment F: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.</p> <p>Segment I: Possible. Suitable habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.</p>	<p>Segment K: Possible. Suitable habitat exists in Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.</p>	<p>Segment J: Possible. Suitable habitat exists in Chamise Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.</p>
abitat scrub; species gment. abitat scrub; species gment. ersidan e; and les of	<p>Segment A: Unlikely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is not appropriate; and species is not known within 10 miles of segment.</p> <p>Segment B: Unlikely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is not appropriate; and species is not known within 10 miles of segment.</p> <p>Segment G: Possible. Suitable habitat exists in Chamise Chaparral, Riverside Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.</p> <p>Segment 2a: Unlikely. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.</p>	<p>Segment A: Unlikely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is not appropriate; and species is not known within 10 miles of segment.</p> <p>Segment B: Unlikely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is not appropriate; and species is not known within 10 miles of segment.</p> <p>Segment F: Unlikely. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment.</p> <p>Segment I: Possible. Suitable habitat exists in Chamise Chaparral, Riverside Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.</p>	<p>Segment K: Possible. Suitable habitat exists in Riverside Sage Scrub and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.</p>	<p>Segment J: Possible. Suitable habitat exists in Chamise Chaparral and Riverside Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment.</p>
habitat Scrub; cies is ment. itait and o; cies is nt. itait land, Sage arral; cies is nt.	<p>Segment A: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment.</p> <p>Segment B: Likely. Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment.</p> <p>Segment G: Likely. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riverside Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment. Segment 2a: Possible. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.</p>	<p>Segment A: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment.</p> <p>Segment B: Likely. Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment.</p> <p>Segment F: Possible. Suitable habitat exists (F2 part) in California Annual Grassland; elevation is appropriate; and species is not known within 10 miles of segment.</p> <p>Segment I: Possible. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riverside Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.</p>	<p>Segment K: Likely. Suitable habitat exists in Riverside Sage Scrub and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.</p>	<p>Segment J: Possible. Suitable habitat exists in Chamise Chaparral and Riverside Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment.</p>

Scientific Name Common Name ¹	Habitat Requirements ²	Flowering period ²			
			Segment 3	Reconductoring	New 230kV Circuit
<i>Eriogonum callistum</i> Tehachapi buckwheat	Chaparral. 4,593 – 4,921 feet	May – July	<p>Suitable habitat exists; and species is not present.</p> <p>Suitable habitat exists; and species is known.</p> <p>Suitable habitat exists; and species is not present.</p> <p>Suitable habitat exists in sub Oak Chaparral; species is not known.</p>	<p>Segment K: Unlikely. Suitable habitat exists in Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.</p>	<p>Segment J: Unlikely. Suitable habitat exists in Chamise Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.</p>
<i>Eriogonum kennedyi</i> var. <i>alpigenum</i> Southern alpine buckwheat	Alpine boulder and rock fields, subalpine coniferous forest; granitic, gravelly soils. 8,530 – 11,480 feet	July – September	<p>Suitable habitat exists; and species is not present.</p> <p>Suitable habitat exists; species is not known.</p> <p>Suitable habitat exists; species is not known.</p> <p>Suitable habitat exists; species is not known.</p>	<p>Segment K: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.</p>	<p>Segment J: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.</p>
<i>Eriogonum kennedyi</i> var. <i>pinicola</i> Kern buckwheat	Chaparral and pinyon and juniper woodland. 4,396 – 6,398 feet	May – June	<p>Suitable habitat exists; and species is known.</p> <p>Suitable habitat exists; and species is known.</p> <p>Suitable habitat exists; and species is not present.</p> <p>Suitable habitat exists in sub Oak Chaparral; species is not known.</p>	<p>Segment K: Unlikely. Suitable habitat exists in Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.</p>	<p>Segment J: Unlikely. Suitable habitat exists in Chamise Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.</p>
<i>Eriogonum microthecum</i> var. <i>johnstonii</i> Johnston's buckwheat	Subalpine coniferous forest, upper montane coniferous forest; rocky soils. 7,300 – 9,515 feet	July – September	<p>Suitable habitat exists; and species is not present.</p> <p>Suitable habitat exists; species is not known.</p> <p>Suitable habitat exists; species is not known.</p> <p>Suitable habitat exists; species is not known.</p>	<p>Segment K: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.</p>	<p>Segment J: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.</p>

Scientific Name Common Name ¹	Habitat Requirements ²	Flowering period ²	Conservation Status ³	Potential for Occurrence within the Project Area ⁴					
				Alternative 1	Alternative 2	Alternative 2a	Alternative 3	Reconductoring	New 230kV Circuit
<i>Dudleya cymosa</i> ssp. <i>crebrifolia</i> San Gabriel River dudleya	Chaparral; granitic soils. 915 - 1,415 feet	April – July	Fed: None CA: None CNPS: 1B.2 USFS: Sensitive	Segment A: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. Segment C: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. Segment D: Possible. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment A: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. Segment B: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. Segment G: Possible. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment A: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. Segment B: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. Segment G: Possible. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. Segment 2a: Unlikely. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.	Segment A: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. Segment B: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. Segment F: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. Segment I: Possible. Suitable habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment K: Possible. Suitable habitat exists in Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment J: Possible. Suitable habitat exists in Chamise Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
<i>Dudleya densiflora</i> San Gabriel Mountains Dudleya	Chaparral, coastal scrub, lower montane coniferous forest; in crevices and on decomposed granite on cliffs and canyon walls. 985 - 1,700 feet	March –July	Fed: None CA: None CNPS: 1B.1 USFS: Sensitive	Segment A: Unlikely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is not appropriate; and species is not known within 10 miles of segment. Segment C: Unlikely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is not appropriate; and species is not known within 10 miles of segment. Segment D: Possible. Suitable habitat exists in Chamise Chaparral, Mojave Creosote Bush Scrub, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment A: Unlikely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is not appropriate; and species is not known within 10 miles of segment. Segment B: Unlikely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is not appropriate; and species is not known within 10 miles of segment. Segment G: Possible. Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment A: Unlikely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is not appropriate; and species is not known within 10 miles of segment. Segment B: Unlikely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is not appropriate; and species is not known within 10 miles of segment. Segment G: Possible. Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. Segment 2a: Unlikely. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.	Segment A: Unlikely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is not appropriate; and species is not known within 10 miles of segment. Segment B: Unlikely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is not appropriate; and species is not known within 10 miles of segment. Segment F: Unlikely. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. Segment I: Possible. Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment K: Possible. Suitable habitat exists in Riversidian Sage Scrub and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment J: Possible. Suitable habitat exists in Chamise Chaparral and Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
<i>Dudleya multicaulis</i> many-stemmed dudleya	Coastal scrub, chaparral, and valley and foothill grassland; usually on clay soils or grassy slopes. 45 - 2,590 feet	April – July	Fed: None CA: None CNPS: 1B.2 USFS: Sensitive	Segment A: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. Segment C: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. Segment D: Possible. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Mojave Creosote Bush Scrub, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment A: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. Segment B: Likely. Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. Segment G: Likely. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.	Segment A: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. Segment B: Likely. Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. Segment G: Likely. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment. Segment 2a: Possible. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment A: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. Segment B: Likely. Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. Segment F: Possible. Suitable habitat exists (F2 part) in California Annual Grassland; elevation is appropriate; and species is not known within 10 miles of segment. Segment I: Possible. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment K: Likely. Suitable habitat exists in Riversidian Sage Scrub and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.	Segment J: Possible. Suitable habitat exists in Chamise Chaparral and Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment.

Scientific Name Common Name ¹	Habitat Requirements ²	Flowering period ²	Conservation Status ³	Potential for Occurrence within the Project Area ⁴					
				Alternative 1	Alternative 2	Alternative 2a	Alternative 3	Reconductoring	New 230kV Circuit
<i>Eriogonum callistum</i> Tehachapi buckwheat	Chaparral. 4,593 – 4,921 feet	May – July	Fed: None CA: None CNPS: 1.B1	Segment A: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. Segment C: Absent. No suitable habitat exists; elevation is not appropriate; and species is known within 10 miles of segment. Segment D: Possible. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is not appropriate; and species is known within 10 miles of segment.	Segment A: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. Segment B: Absent. No suitable habitat exists; elevation is not appropriate; and species is known within 10 miles of segment. Segment G: Possible. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is not appropriate; and species is known within 10 miles of segment.	Segment A: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. Segment B: Absent. No suitable habitat exists; elevation is not appropriate; and species is known within 10 miles of segment. Segment G: Possible. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is not appropriate; and species is known within 10 miles of segment. Segment 2a: Possible. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment A: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. Segment B: Absent. No suitable habitat exists; elevation is not appropriate; and species is known within 10 miles of segment. Segment F: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. Segment I: Possible. Suitable habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment K: Unlikely. Suitable habitat exists in Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.	Segment J: Unlikely. Suitable habitat exists in Chamise Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.
<i>Eriogonum kennedyi</i> var. <i>alpigenum</i> Southern alpine buckwheat	Alpine boulder and rock fields, subalpine coniferous forest, granitic, gravelly soils. 8,530 – 11,480 feet	July – September	Fed: None CA: None CNPS: 1B.3 USFS: Sensitive	Segment A: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. Segment C: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. Segment D: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment A: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. Segment B: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. Segment G: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment A: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. Segment B: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. Segment G: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. Segment 2a: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment A: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. Segment B: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. Segment F: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. Segment I: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment K: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment J: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.
<i>Eriogonum kennedyi</i> var. <i>pinicola</i> Kern buckwheat	Chaparral and pinyon and juniper woodland. 4,396 – 6,398 feet	May – June	Fed: None CA: None CNPS: 1.B1 BLM: SS	Segment A: Absent. No suitable habitat exists; elevation is not appropriate; and species is known within 10 miles of segment. Segment C: Absent. No suitable habitat exists; elevation is not appropriate; and species is known within 10 miles of segment. Segment D: Unlikely. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.	Segment A: Absent. No suitable habitat exists; elevation is not appropriate; and species is known within 10 miles of segment. Segment B: Absent. No suitable habitat exists; elevation is not appropriate; and species is known within 10 miles of segment. Segment G: Possible. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is not appropriate; and species is known within 10 miles of segment.	Segment A: Absent. No suitable habitat exists; elevation is not appropriate; and species is known within 10 miles of segment. Segment B: Absent. No suitable habitat exists; elevation is not appropriate; and species is known within 10 miles of segment. Segment G: Possible. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is not appropriate; and species is known within 10 miles of segment. Segment 2a: Possible. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment A: Absent. No suitable habitat exists; elevation is not appropriate; and species is known within 10 miles of segment. Segment B: Absent. No suitable habitat exists; elevation is not appropriate; and species is known within 10 miles of segment. Segment F: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. Segment I: Possible. Suitable habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment K: Unlikely. Suitable habitat exists in Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.	Segment J: Unlikely. Suitable habitat exists in Chamise Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.
<i>Eriogonum microthecum</i> var. <i>johnstonii</i> Johnston's buckwheat	Subalpine coniferous forest, upper montane coniferous forest: rocky soils. 7,300 – 9,515 feet	July – September	Fed: None CA: None CNPS: 1B.3 USFS: Sensitive	Segment A: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. Segment C: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. Segment D: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment A: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. Segment B: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. Segment G: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment A: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. Segment B: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. Segment G: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. Segment 2a: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment A: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. Segment B: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. Segment F: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. Segment I: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment K: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment J: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.

Potential for Occurrence within the Project Area ⁴				
	Alternative 2a	Alternative 3	Reconductoring	New 230kV Circuit
<p>at scrub, n is within</p> <p>at scrub; ies is</p> <p>suitable appropriate; niles of</p>	<p>Segment A: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub, and Mojave Wash Scrub; elevation is appropriate; and species is known within 10 miles of segment.</p> <p>Segment B: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment.</p> <p>Segment G: Absent. No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment.</p> <p>Segment 2a: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.</p>	<p>Segment A: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub, and Mojave Wash Scrub; elevation is appropriate; and species is known within 10 miles of segment.</p> <p>Segment B: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment.</p> <p>Segment F: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.</p> <p>Segment I: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.</p>	<p>Segment K: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.</p>	<p>Segment J: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.</p>
<p>at scrub, n is within</p> <p>at scrub; ies is</p> <p>suitable appropriate; niles of</p>	<p>Segment A: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub, and Mojave Wash Scrub; elevation is appropriate; and species is known within 10 miles of segment.</p> <p>Segment B: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment.</p> <p>Segment G: Absent. No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment.</p> <p>Segment 2a: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.</p>	<p>Segment A: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub, and Mojave Wash Scrub; elevation is appropriate; and species is known within 10 miles of segment.</p> <p>Segment B: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment.</p> <p>Segment F: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.</p> <p>Segment I: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.</p>	<p>Segment K: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.</p>	<p>Segment J: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.</p>
<p>riate; 0 miles</p> <p>riate; niles of</p> <p>habitat al and n within</p>	<p>Segment A: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.</p> <p>Segment B: Absent. No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment.</p> <p>Segment G: Likely. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.</p> <p>Segment 2a: Likely. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.</p>	<p>Segment A: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.</p> <p>Segment B: Absent. No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment.</p> <p>Segment F: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.</p> <p>Segment I: Likely. Suitable habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is known within 10 miles of segment.</p>	<p>Segment K: Likely. Suitable habitat exists in Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.</p>	<p>Segment J: Likely. Suitable habitat exists in Chamise Chaparral; elevation is appropriate; and species is known within 10 miles of segment.</p>

Scientific Name Common Name ¹	Habitat Requirements ²	Flowering period ²			
			Segment 3	Reconductoring	New 230kV Circuit
<i>Githopsis tenella</i> delicate bluecup	Chaparral, cismontane woodland. 3,609 – 6,234 feet	May – June	able habitat exists; species is not known able habitat exists; species is known able habitat exists; and species is not ment. le habitat exists in b Oak Chaparral; species is not known	Segment K: Unlikely. Suitable habitat exists in Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.	Segment J: Unlikely. Suitable habitat exists in Chamise Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.
<i>Harpagonella palmeri</i> Palmer's grapplinghook	Chaparral, coastal scrub, and valley and foothill grasslands in clay soils and open shrublands. 66 – 3,133 feet	March – May	le habitat exists in ; elevation is ot known within 10 habitat exists in and Mojave Creosote opriate; and species gment. le habitat exists (F2 ssland; elevation is ot known within 10 le habitat exists in Chamise Chaparral, Scrub Oak Chaparral; species is not known	Segment K: Likely. Suitable habitat exists in Riversidian Sage Scrub and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.	Segment J: Likely. Suitable habitat exists in Chamise Chaparral and Riversidian Sage Scrub; elevation is appropriate; and species is known within 10 miles of segment.
<i>Heuchera abramsii</i> Abram's alumroot	Upper montane coniferous forest; rocky areas. 9,325 - 11,655 feet	July –August	able habitat exists; and species is not ment. able habitat exists; pecies is not known able habitat exists; pecies is not known ble habitat exists; pecies is not known	Segment K: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment J: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.

Scientific Name Common Name ¹	Habitat Requirements ²	Flowering period ²	Conservation Status ³	Potential for Occurrence within the Project Area ⁴					
				Alternative 1	Alternative 2	Alternative 2a	Alternative 3	Reconductoring	New 230kV Circuit
<i>Eriophyllum mohavense</i> Barstow woolly sunflower	Chenopod scrub, Mojavean desert scrub, and playas. 1,640 – 3,150 feet	April – May	Fed: None CA: None CNPS: 1B.2 BLM: SS	Segment A: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub, and Mojave Wash Scrub; elevation is appropriate; and species is known within 10 miles of segment. Segment C: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub and Mojave Wash Scrub; elevation is appropriate; and species is known within 10 miles of segment. Segment D: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment.	Segment A: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub, and Mojave Wash Scrub; elevation is appropriate; and species is known within 10 miles of segment. Segment B: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. Segment G: Absent. No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment.	Segment A: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub, and Mojave Wash Scrub; elevation is appropriate; and species is known within 10 miles of segment. Segment B: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. Segment G: Absent. No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment. Segment 2a: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.	Segment A: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub, and Mojave Wash Scrub; elevation is appropriate; and species is known within 10 miles of segment. Segment B: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. Segment F: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. Segment I: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.	Segment Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.	Segment J: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.
<i>Eschscholzia minutiflora</i> ssp. <i>twisselmannii</i> Red Rock poppy	Mojavean desert scrub. 2,231 – 4,035 feet	March – May	Fed: None CA: None CNPS: 1B.2 BLM: SS	Segment A: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub, and Mojave Wash Scrub; elevation is appropriate; and species is known within 10 miles of segment. Segment C: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub and Mojave Wash Scrub; elevation is appropriate; and species is known within 10 miles of segment. Segment D: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment.	Segment A: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub, and Mojave Wash Scrub; elevation is appropriate; and species is known within 10 miles of segment. Segment B: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. Segment G: Absent. No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment.	Segment A: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub, and Mojave Wash Scrub; elevation is appropriate; and species is known within 10 miles of segment. Segment B: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. Segment G: Absent. No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment. Segment 2a: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.	Segment A: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub, and Mojave Wash Scrub; elevation is appropriate; and species is known within 10 miles of segment. Segment B: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. Segment F: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. Segment I: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.	Segment Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.	Segment J: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.
<i>Galium grande</i> San Gabriel bedstraw	Cismontane woodland, chaparral, broadleaved upland forest, lower montane coniferous forest. Microhabitat of open chaparral and low, open oak forest and rocky slopes. 1,400 - 5,000 feet	January – July	Fed: None CA: None CNPS: 1B.2 USFS: Sensitive	Segment A: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. Segment C: Absent. No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment. Segment D: Likely. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.	Segment A: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. Segment B: Absent. No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment. Segment G: Likely. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.	Segment A: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. Segment B: Absent. No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment. Segment G: Likely. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment. Segment 2a: Likely. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.	Segment A: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. Segment B: Absent. No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment. Segment F: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. Segment I: Likely. Suitable habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is known within 10 miles of segment.	Segment Likely. Suitable habitat exists in Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.	Segment J: Likely. Suitable habitat exists in Chamise Chaparral; elevation is appropriate; and species is known within 10 miles of segment.

Scientific Name Common Name ¹	Habitat Requirements ²	Flowering period ²	Conservation Status ³	Potential for Occurrence within the Project Area ⁴					
				Alternative 1	Alternative 2	Alternative 2a	Alternative 3	Reconductoring	New 230kV Circuit
<i>Githopsis tenella</i> delicate bluecup	Chaparral, cismontane woodland. 3,609 – 6,234 feet	May – June	Fed: None CA: None CNPS: 1.B3	Segment A: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. Segment C: Absent. No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment. Segment D: Possible. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is not appropriate; and species is known within 10 miles of segment.	Segment A: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. Segment B: Absent. No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment. Segment G: Likely. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment. Segment G: Likely. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.	Segment A: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. Segment B: Absent. No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment. Segment G: Likely. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment. Segment 2a: Possible. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment A: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. Segment B: Absent. No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment. Segment F: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. Segment I: Possible. Suitable habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment K: Unlikely. Suitable habitat exists in Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.	Segment J: Unlikely. Suitable habitat exists in Chamise Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.
<i>Harpagonella palmeri</i> Palmer’s grapplinghook	Chaparral, coastal scrub, and valley and foothill grasslands in clay soils and open shrublands. 66 – 3,133 feet	March – May	Fed: None CA: None CNPS: 4.2	Segment A: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. Segment C: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. Segment D: Likely. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Mojave Creosote Bush Scrub, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.	Segment A: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. Segment B: Likely. Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. Segment G: Possible. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment A: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. Segment B: Likely. Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. Segment G: Possible. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. Segment 2a: Possible. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment A: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. Segment B: Likely. Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. Segment F: Possible. Suitable habitat exists (F2 part) in California Annual Grassland; elevation is appropriate; and species is not known within 10 miles of segment. Segment I: Possible. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment K: Likely. Suitable habitat exists in Riversidian Sage Scrub and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.	Segment J: Likely. Suitable habitat exists in Chamise Chaparral and Riversidian Sage Scrub; elevation is appropriate; and species is known within 10 miles of segment.
<i>Heuchera abramsii</i> Abram’s alumroot	Upper montane coniferous forest; rocky areas. 9,325 - 11,655 feet	July –August	Fed: None CA: None CNPS: 4.3 USFS: Sensitive	Segment A: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. Segment C: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. Segment D: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment A: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. Segment B: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. Segment G: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. Segment G: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment A: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. Segment B: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. Segment G: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. Segment 2a: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment A: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. Segment B: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. Segment F: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. Segment I: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment K: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment J: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.

Potential for Occurrence within the Project Area ⁴				
	Alternative 2a	Alternative 3	Reconductoring	New 230kV Circuit
own own uitable ppropriate; 0 miles	<p>Segment A: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment.</p> <p>Segment B: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment.</p> <p>Segment G: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.</p> <p>Segment 2a: Possible. Suitable habitat exists in Interior Live Oak Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.</p>	<p>Segment A: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment.</p> <p>Segment B: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment.</p> <p>Segment F: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment.</p> <p>Segment I: Possible. Suitable habitat exists in Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.</p>	<p>Segment K: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment.</p>	<p>Segment J: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment.</p>
abitat scrub; es is ent. abitat scrub; es is ent. abitat rsidian	<p>Segment A: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment.</p> <p>Segment B: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment.</p> <p>Segment G: Possible. Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.</p> <p>Segment 2a: Possible. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.</p>	<p>Segment A: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment.</p> <p>Segment B: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment.</p> <p>Segment F: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.</p> <p>Segment I: Possible. Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.</p>	<p>Segment K: Possible. Suitable habitat exists in Riversidian Sage Scrub and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.</p>	<p>Segment J: Possible. Suitable habitat exists in Chamise Chaparral and Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment.</p>
own within within	<p>Segment A: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment.</p> <p>Segment B: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.</p> <p>Segment G: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.</p> <p>Segment 2a: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.</p>	<p>Segment A: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment.</p> <p>Segment B: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.</p> <p>Segment F: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.</p> <p>Segment I: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.</p>	<p>Segment K: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.</p>	<p>Segment J: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.</p>
own within within	<p>Segment A: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment.</p> <p>Segment B: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.</p> <p>Segment G: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.</p> <p>Segment 2a: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.</p>	<p>Segment A: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment.</p> <p>Segment B: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.</p> <p>Segment F: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.</p> <p>Segment I: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.</p>	<p>Segment K: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.</p>	<p>Segment J: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.</p>

Scientific Name Common Name ¹	Habitat Requirements ²	Flowering period ²	e 3	Reconductoring	New 230kV Circuit
<i>Imperata brevifolia</i> California satintail	Chaparral, coastal scrub, Mojavean desert scrub, meadows and seeps (often alkali), riparian scrub in mesic soil. 0 - 1,640 feet	September – May	<p>the habitat exists in Mojave Creosote Bush riate; and species is egment.</p> <p>the habitat exists in Mojave Creosote Bush riate; and species is egment.</p> <p>ble habitat exists; nd species is not nent.</p> <p>the habitat exists in an Sage Scrub, and on is appropriate; and 0 miles of segment.</p>	<p>Segment K: Possible. Suitable habitat exists in Riversidian Sage Scrub and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.</p>	<p>Segment J: Possible. Suitable habitat exists in Chamise Chaparral and Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment.</p>
<i>Juglans californica</i> Southern California black walnut	Chaparral, cismontane woodland, and alluvial coastal scrub. 60 - 2,950 feet	March – August	<p>le habitat exists in ; elevation is ot known within 10</p> <p>le habitat exists in ; elevation is ot known within 10</p> <p>ble habitat exists; species is not known</p> <p>the habitat exists in an Sage Scrub, and on is appropriate; and 0 miles of segment.</p>	<p>Segment K: Possible. Suitable habitat exists in Riversidian Sage Scrub and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.</p>	<p>Segment J: Possible. Suitable habitat exists in Chamise Chaparral and Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment.</p>
<i>Layia heterotricha</i> pale-yellow layia	Cismontane woodland, coastal scrub, pinyon and juniper woodland, and valley and foothill grassland. 984 – 5,594 feet	March – June	<p>habitat exists in ; elevation is own within 10 miles</p> <p>habitat exists in and Mojave Creosote opriate; and species egment.</p> <p>habitat exists in elevation is own within 10 miles</p> <p>habitat exists in and Riversidian Sage e; and species is nent.</p>	<p>Segment K: Possible. Suitable habitat exists in Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment.</p>	<p>Segment J: Possible. Suitable habitat exists in Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment.</p>

Scientific Name Common Name ¹	Habitat Requirements ²	Flowering period ²	Conservation Status ³	Potential for Occurrence within the Project Area ⁴					
				Alternative 1	Alternative 2	Alternative 2a	Alternative 3	Reconductoring	New 230kV Circuit
<i>Heuchera elegans</i> um-flowered alumroot	Cismontane woodland, lower montane coniferous forest, montane riparian forest, upper montane coniferous forest; rocky habitat. 3,845 - 8,825 feet	May – August	Fed: None CA: None CNPS: 4.3 USFS: Sensitive	Segment A: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. Segment C: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. Segment D: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment.	Segment A: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. Segment B: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. Segment G: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.	Segment A: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. Segment B: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. Segment G: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. Segment 2a: Possible. Suitable habitat exists in Interior Live Oak Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment A: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. Segment B: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. Segment F: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. Segment I: Possible. Suitable habitat exists in Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment K: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment.	Segment J: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment.
<i>Horkelia cuneata</i> ssp. <i>puberula</i> mesa horkelia	Maritime chaparral, cismontane woodland, gravelly or sandy coastal scrub. 230 - 2,660 feet	February – July (Sept. is unusual)	Fed: None CA: None CNPS: 1B.1 USFS: Sensitive	Segment A: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. Segment C: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. Segment D: Possible. Suitable habitat exists in Chamise Chaparral, Mojave Creosote Bush Scrub, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment A: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. Segment B: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. Segment G: Possible. Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment A: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. Segment B: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. Segment G: Possible. Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. Segment 2a: Possible. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment A: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. Segment B: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. Segment F: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. Segment I: Possible. Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment K: Possible. Suitable habitat exists in Riversidian Sage Scrub and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment J: Possible. Suitable habitat exists in Chamise Chaparral and Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
<i>Hulsea vestita</i> ssp. <i>gabrielensis</i> San Gabriel Mountains sunflower	Lower and upper montane coniferous forest; rocky habitat. 4,995 - 8,325 feet	May – July	Fed: None CA: None CNPS: 4.3 USFS: Sensitive	Segment A: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. Segment C: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. Segment D: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment A: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. Segment B: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. Segment G: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment A: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. Segment B: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. Segment G: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. Segment 2a: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment A: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. Segment B: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. Segment F: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. Segment I: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment K: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment J: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.
<i>Hulsea vestita</i> ssp. <i>pygmaea</i> pygmy alpine gold	Alpine boulder and rock fields, subalpine coniferous forest; granitic or gravelly sites. 9,440 - 12,990 feet	June – October	Fed: None CA: None CNPS: 1B.3 USFS: Sensitive	Segment A: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. Segment C: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. Segment D: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment A: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. Segment B: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. Segment G: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment A: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. Segment B: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. Segment G: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. Segment 2a: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment A: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. Segment B: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. Segment F: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. Segment I: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment K: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment J: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.

Scientific Name Common Name ¹	Habitat Requirements ²	Flowering period ²	Conservation Status ³	Potential for Occurrence within the Project Area ⁴					
				Alternative 1	Alternative 2	Alternative 2a	Alternative 3	Reconductoring	New 230kV Circuit
<i>Imperata brevifolia</i> California satintail	Chaparral, coastal scrub, Mojavean desert scrub, meadows (often alkali), riparian scrub in mesic soil. 0 - 1,640 feet	September – May	Fed: None CA: None CNPS: 2.1 USFS: Sensitive	Segment A: Unlikely. Suitable habitat exists in Joshua Tree Woodland and Mojave Creosote Bush Scrub; elevation is not appropriate; and species is not known within 10 miles of segment. Segment C: Unlikely. Suitable habitat exists in Joshua Tree Woodland and Mojave Creosote Bush Scrub; elevation is not appropriate; and species is not known within 10 miles of segment. Segment D: Possible. Suitable habitat exists in Chamise Chaparral, Joshua Tree Woodland Mojave Creosote Bush Scrub, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment A: Unlikely. Suitable habitat exists in Joshua Tree Woodland and Mojave Creosote Bush Scrub; elevation is not appropriate; and species is not known within 10 miles of segment. Segment B: Unlikely. Suitable habitat exists in Joshua Tree Woodland and Mojave Creosote Bush Scrub; elevation is not appropriate; and species is not known within 10 miles of segment. Segment G: Possible. Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment A: Unlikely. Suitable habitat exists in Joshua Tree Woodland and Mojave Creosote Bush Scrub; elevation is not appropriate; and species is not known within 10 miles of segment. Segment B: Unlikely. Suitable habitat exists in Joshua Tree Woodland and Mojave Creosote Bush Scrub; elevation is not appropriate; and species is not known within 10 miles of segment. Segment G: Possible. Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. Segment 2a: Unlikely. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.	Segment A: Unlikely. Suitable habitat exists in Joshua Tree Woodland and Mojave Creosote Bush Scrub; elevation is not appropriate; and species is not known within 10 miles of segment. Segment B: Unlikely. Suitable habitat exists in Joshua Tree Woodland and Mojave Creosote Bush Scrub; elevation is not appropriate; and species is not known within 10 miles of segment. Segment F: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. Segment I: Possible. Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment K: Possible. Suitable habitat exists in Riversidian Sage Scrub and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment J: Possible. Suitable habitat exists in Chamise Chaparral and Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
<i>Juglans californica</i> Southern California black walnut	Chaparral, cismontane woodland, and alluvial coastal scrub. 60 - 2,950 feet	March – August	Fed: None CA: None CNPS: 4.2 USFS Watch List	Segment A: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. Segment C: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. Segment D: Possible. Suitable habitat exists in Chamise Chaparral, Mojave Creosote Bush Scrub, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment A: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. Segment B: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. Segment G: Possible. Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment A: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. Segment B: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. Segment G: Possible. Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. Segment 2a: Possible. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment A: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. Segment B: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. Segment F: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. Segment I: Possible. Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment K: Possible. Suitable habitat exists in Riversidian Sage Scrub and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment J: Possible. Suitable habitat exists in Chamise Chaparral and Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
<i>Layia heterotricha</i> pale-yellow layia	Cismontane woodland, coastal scrub, pinyon and juniper woodland, and valley and foothill grassland. 984 – 5,594 feet	March – June	Fed: None CA: None CNPS: 1B.1	Segment A: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. Segment C: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. Segment D: Possible. Suitable habitat exists in California Annual Grassland, Mojave Creosote Bush Scrub, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment A: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. Segment B: Likely. Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. Segment G: Likely. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.	Segment A: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. Segment B: Likely. Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. Segment G: Likely. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment. Segment 2a: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.	Segment A: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. Segment B: Likely. Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. Segment F: Likely. Suitable habitat exists in California Annual Grassland; elevation is appropriate; and species is known within 10 miles of segment. Segment I: Likely. Suitable habitat exists in California Annual Grassland and Riversidian Sage Scrub; elevation is appropriate; and species is known within 10 miles of segment.	Segment K: Possible. Suitable habitat exists in Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment.	Segment J: Possible. Suitable habitat exists in Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment.

Scientific Name Common Name¹	Habitat Requirements²	Flowering period²	Conservation Status³	Potential for Occurrence within the Project Area⁴					
				Alternative 1	Alternative 2	Alternative 2a	Alternative 3	Reconductoring	New 230kV Circuit
<i>Lepechinia fragrans</i> fragrant pitcher sage	Chaparral. 70 - 4,360 feet	March – October	Fed: None CA: None CNPS: 4.2 USFS: Sensitive	Segment A: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. Segment C: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. Segment D: Unlikely. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment A: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. Segment B: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. Segment G: Unlikely. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment A: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. Segment B: Absent. No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment. Segment G: Unlikely. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. Segment 2a: Possible. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment A: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. Segment B: Absent. No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment. Segment F: Absent. No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment. Segment I: Possible. Suitable habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment K: Unlikely. Suitable habitat exists in Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment J: Unlikely. Suitable habitat exists in Chamise Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
<i>Lepechinia rossii</i> Ross' pitcher sage	Chaparral. 1,000 - 2,610 feet	May -September	Fed: None CA: None CNPS: 1B.2 USFS: Sensitive	Segment A: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. Segment C: Absent. No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment. Segment D: Likely. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.	Segment A: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. Segment B: Absent. No suitable habitat exists; elevation is appropriate; species is known within 10 miles of segment. Segment G: Likely. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.	Segment A: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. Segment B: Absent. No suitable habitat exists; elevation is appropriate; species is known within 10 miles of segment. Segment G: Likely. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment. Segment 2a: Likely. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.	Segment A: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. Segment B: Absent. No suitable habitat exists; elevation is appropriate; species is known within 10 miles of segment. Segment F: Absent. No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment. Segment I: Likely. Suitable habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is known within 10 miles of segment.	Segment K: Likely. Suitable habitat exists in Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.	Segment J: Likely. Suitable habitat exists in Chamise Chaparral; elevation is appropriate; and species is known within 10 miles of segment.
<i>Leptosiphon serrulatus</i> Madera leptosiphon	Cismontane woodland and lower montane coniferous forest. 984 – 4,265 feet	April – May	Fed: None CA: None CNPS: 1B.2	Segment A: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. Segment C: Absent. No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment. Segment D: Absent. No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment.	Segment A: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. Segment B: Absent. No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment. Segment G: Absent. No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment.	Segment A: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. Segment B: Absent. No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment. Segment G: Absent. No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment. Segment 2a: Possible. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment A: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. Segment B: Absent. No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment. Segment F: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. Segment I: Possible. Suitable habitat exists in Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment K: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.	Segment J: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.

APPENDIX H: BIOLOGICAL ASSESSMENT

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July 2011

LOS ANGELES DEPARTMENT OF WATER AND POWER

Barren Ridge Renewable Transmission Project

Biological Assessment

PROJECT NUMBER:

116313

PROJECT CONTACT:

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EXECUTIVE SUMMARY

The City of Los Angeles Department of Water and Power (LADWP) is proposing to construct the Barren Ridge Renewable Transmission Project (BR RTP or Project) to access renewable energy resources in the Tehachapi Mountains and Mojave Desert areas. The proposed Project would transmit renewable energy resources to high load demand areas, improve system reliability, and upgrade the transmission capacity.

LADWP, the U.S. Department of Agriculture, Forest Service (USFS or Forest Service), and the U.S. Department of the Interior, Bureau of Land Management (BLM) are preparing a joint Environmental Impact Statement (EIS) / Environmental Impact Report (EIR) for the proposed BR RTP.

The purpose of this Biological Assessment (BA) is to address the potential effect of the BR RTP on species listed under the Endangered Species Act (ESA) as endangered or threatened and/or their designated critical habitat.

Early coordination and pre-consultation with the U.S. Fish and Wildlife Service (USFWS or Service) was conducted during a series of meetings and phone conversations (Appendix A). After consultation with the Service, a list of sixteen species that may be affected by the Project was produced (species list # 2008-SL-0346, dated May 1, 2008). This Biological Assessment addresses the effects of the proposed Project on these sixteen species listed in Table ES-1.

TABLE ES-1. SPECIES POTENTIALLY AFFECTED

Common Name	Scientific Name	Federal Status	Presence in Project Site
PLANTS			
California orcutt grass	<i>Orcuttia californica</i>	Endangered	Absent
Nevin's barberry	<i>Berberis nevinii</i>	Endangered	Known to occur
Slender-horned spineflower	<i>Dodecahema leptoceras</i>	Endangered	Potential to occur
Spreading navarretia	<i>Navarretia fossalis</i>	Threatened	Absent
BIRDS			
California condor	<i>Gymnogyps californianus</i>	Endangered	Present
Coastal California gnatcatcher	<i>Poliophtila californica</i>	Threatened, Critical Habitat	Present
Southwestern willow flycatcher	<i>Empidonax traillii extimus</i>	Endangered, Critical Habitat	Potential to occur
Least Bell's vireo	<i>Vireo bellii pusillus</i>	Endangered	Present
Yellow-billed cuckoo	<i>Coccyzus americanus</i>	Candidate	Potential to occur
REPTILE			
Desert Tortoise	<i>Gopherus agassizii</i>	Threatened	Present

Common Name	Scientific Name	Federal Status	Presence in Project Site
AMPHIBIANS			
California red-legged frog	<i>Rana draytonii</i>	Threatened, Critical Habitat	Potential to occur
Arroyo toad	<i>Anaxyrus californicus</i>	Endangered, Critical Habitat	Potential to occur
FISH			
Unarmored threespine stickleback	<i>Gasterosteus aculeatus williamsoni</i>	Endangered	Potential to occur
Santa Ana sucker	<i>Catostomus santaanae</i>	Threatened	Absent
INVERTEBRATES			
Riverside fairy shrimp	<i>Streptocephalus woottoni</i>	Endangered	Absent
Vernal pool fairy shrimp	<i>Branchinecta lynchi</i>	Threatened	Absent

This BA, prepared by the BLM, USFS, LADWP and POWER Engineers, Inc. (POWER), addresses the Proposed Action in compliance with Section 7 of the ESA. Section 7 ensures that, through consultation (or conferencing for proposed species) with the Service, federal actions do not jeopardize the continued existence of any threatened, endangered or proposed species, or result in the destruction or adverse modification of critical habitat. Species Best Management Practices (USFS/BLM/LADWP 2011) would be incorporated in the Plan of Development (POD) that would directly and indirectly benefit the listed ESA species and reduce impacts. In addition to the Project design measures, specific mitigation measures are proposed to reduce impacts to biological resources (Section 4.5).

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APPENDICES

Appendix A – New 230 kV Transmission Line Vegetation Maps
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Appendix E – Botanical Resources Project Area Map
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1.0 INTRODUCTION

1.1 PROJECT BACKGROUND

The City of Los Angeles Department of Water and Power (LADWP) is proposing the Barren Ridge Renewable Transmission Project (BRRTP or Project) to access clean, renewable resources in the Tehachapi Mountains and Mojave Desert areas, and to improve reliability and upgrade transmission capacity.

LADWP, the U.S. Department of Agriculture, Forest Service (USFS or Forest Service) and the U.S. Department of the Interior, Bureau of Land Management (BLM) are preparing a joint Environmental Impact Statement (EIS) / Environmental Impact Report (EIR) for the proposed BRRTP. LADWP is the California Environmental Quality Act (CEQA) Lead Agency, while the USFS and BLM are the federal Co-Lead Agencies under the National Environmental Policy Act (NEPA). An EIS/EIR is an informational disclosure document used to inform agency decision makers and the public of the potential significant environmental effects of a project, identify possible ways to eliminate or minimize the potential significant effects, and describe reasonable alternatives to the proposed action/project.

LADWP prepared an Alternatives Development Report (USFS/BLM/LADWP 2011) to document the development of alternatives and determine which alternatives would be considered for full analysis in the EIS/EIR. A range of alternatives was identified through a siting and routing evaluation, the scoping process, and supplemental studies and consultations. Each Lead Agency (USFS, BLM and LADWP) has its own purposes to consider in evaluating a proposed project/action and the alternatives to the proposed project/action. NEPA (CFR Title 40 Section 1502.13) and CEQA (Guidelines Section 15124(b)) explain that an agency's statement of objectives or purpose and need should describe the underlying purpose of the proposed project or need for action. Each agency's jurisdiction is unique, and the decision it is called upon to make is also unique; thus, each agency's statement of objectives or purpose and need is different. Based upon review of potential impact characterizations, significant and unavoidable adverse effects, agency and public comments, and a consideration of cumulative impacts of the alternative routes, the BLM, USFS, and LADWP identified Alternative 2, also LADWP's Proposed Action, as the agency preferred alternative. Therefore, the preferred 230 kV Alternative, Alternative 2 (Proposed Action), has been carried forward for evaluation in this Biological Assessment (BA).

This BA, prepared by the BLM, USFS, LADWP and POWER Engineers, Inc. (POWER), evaluates the Proposed Action in compliance with Section 7 of the Endangered Species Act (ESA). Potential impacts of the Proposed Action are discussed separately for each Project component, which consists of the following (Figure 1):

- 1) Construction of approximately 61 miles of a new 230 kilovolt (kV) double-circuit transmission line from the LADWP Barren Ridge Switching Station to Haskell Canyon;
- 2) Addition of approximately 12 miles of a new 230 kV circuit on the existing double-circuit structures from Haskell Canyon to the Castaic Power Plant;
- 3) Reconductoring of approximately 76 miles of the existing Barren Ridge-Rinaldi (BR-RIN) 230 kV transmission line with larger capacity conductors between the Barren Ridge Switching Station and the Rinaldi Substation;
- 4) Construction of a new switching station in Haskell Canyon;
- 5) Expansion of the existing Barren Ridge Switching Station.

The purpose of this BA is to address the effect of the BRRTP on species listed as endangered or threatened under the ESA, or their designated critical habitat. Section 7(a)(2) of the ESA of 1973 (16 U.S.C. 1531 et seq.) states: "Each Federal agency shall, in consultation with and with the assistance of the Secretary, insure that any action authorized, funded, or carried out by such agency (hereinafter in this

section referred to as an “agency action”) is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat of such species which is determined by the Secretary, after consultation as appropriate with affected States, to be critical, unless such agency has been granted an exemption for such action by the Committee pursuant to subsection (h) of this section.”

1.2 PROJECT AREA

The proposed Project is located within northern Los Angeles County and southern Kern County, California. The Project area under evaluation is bounded by the southern slopes of the Tehachapi Mountains in the north, State Route 14 in the east, the Santa Clara River in the south, and Interstate 5 in the west. The Proposed Action extends from the Barren Ridge Switching Station and runs south, paralleling LADWP’s existing 230 kV BR-RIN and 500 kV Pacific Direct Current Intertie (PDCI) transmission lines. It travels south from Mojave, California to the Antelope Valley California Poppy Reserve. It continues south into National Forest System lands, remaining within designated utility corridors, and ends at the proposed Haskell Canyon Switching Station.

The study area for this BA covers approximately 1,280 square miles. The study area is defined as a 500-foot-wide corridor (250 feet on each side of the route centerline) along the Proposed Action 230 kV transmission line route, 230 kV reconductoring line, and additional double circuit to the existing 230 kV line. The study area for the Proposed Action 230 kV transmission line route also included a five-mile corridor in areas that had potential to indirectly impact aquatic species or riparian habitat. Figure 1 provides a map of the vicinity of the Project area and Project components, including preliminary routing segment labels, which are used throughout this document to identify specific study areas.

FIGURE 1. BR RTP COMPONENTS AND STUDY AREA



2.0 CONSULTATION WITH OTHERS

Early coordination and pre-consultation with the U.S. Fish and Wildlife Service (USFWS) was conducted during a series of meetings and phone conversations. A summary of the coordination and consultation to date is provided below (Table 1).

TABLE 1. BRRTP FEDERAL CONTACT SUMMARIES

Agency	Study Component	Date	Type of Contact	Summary
US Forest Service, Angeles National Forest, Janet Nickerman	Species list	01/09/2008	Email	USFS provided Angeles National Forest sensitive species list.
Bureau of Land Management, Ridgecrest Field Office, Shelly Ellis	Species list	03/06/2008	Email	BLM provided their sensitive species list.
US Forest Service, Angeles National Forest, Arcadia Office	Sensitive Wildlife Species	03/25/2008	Meeting	Discussed sensitive wildlife species and habitat, survey needs, survey approach and potential impact of transmission line.
US Forest Service, Marian Kadota	Plant Management Plans	04/01/2008	Written Communication	USFS provided copies of USFS plant management guides.
US Fish and Wildlife Service, Ventura Office	Species list	04/02/2008	Written Communication	Request for Special-Status Species List for the Barren Ridge Renewable Transmission Project, Kern and Los Angeles Counties.
US Forest Service, Angeles National Forest, Nancy Sandburg and Janet Nickerman	Survey Approach	04/03/2008	Email	Requested review of survey approach for the BRRTP.
US Forest Service, Angeles National Forest, Arcadia Office	Sensitive Plant Species	04/04/2008	Meeting	Discussed sensitive plant and invasive species in study area, survey needs, survey approach and potential impact of transmission line.
US Fish and Wildlife Service, Ventura Office	Species list	05/01/2008	Written Communication	USFWS provided list of species fulfilling the requirements of the USFWS under Section 7(c) of the Endangered Species Act.
US Fish and Wildlife Service, Ventura Office, Chris Dellith	Protocol Surveys for Amphibian species	05/08/2008	Telephone	USFWS reviewed the amphibian site assessment report and gave verbal approval to proceed with protocol surveys.
US Forest Service, Angeles National Forest, Katie VinZant	Botany Surveys	05/08/2008	Meeting	Discussed the Botany Surveys, Seed Collection and use of Herbicides.
US Forest Service, Angeles National Forest, Ann M Berkley	GIS data	05/09/2008	Email	Spotted Owl shapefiles provided for the Project Area.
US Forest Service, Angeles National Forest, Ann M Berkley	GIS data	05/12/2008	Email	USFS provided Arroyo Toad and CA red-legged frog GIS habitat data.
US Forest Service, Angeles National Forest, Justin Seastrand	Avian Risk Assessment	05/12/2008	Email	USFS provided a draft avian risk assessment report.

Agency	Study Component	Date	Type of Contact	Summary
US Fish and Wildlife Service, Ventura Office, Ashleigh Blackford	Desert Tortoise	05/20/2008	Telephone	Discussed habitat assessment for desert tortoise and USFWS recommended survey approach.
US Forest Service, Angeles National Forest, Nancy Sandburg	Fauna and Flora Records	06/06/2008	Email	USFS provided Flora and Fauna spreadsheet for recording data.
US Fish and Wildlife Service, Ventura Office, Della Snyder-Velto	Wildlife Species	06/12/2008	Telephone	Discussed survey needs and wildlife in study area.
US Fish and Wildlife Service, Ventura Office, Della Snyder Velto	Unarmored three-spine stickleback	06/12/2008	Email	Discussed analyzing effects of the action to UTS.
US Forest Service, Angeles National Forest, Katie VinZant	Botany reports	06/20/2008	Email	USFS provided template for the ANF requirements for botany reports.
US Fish and Wildlife Service, Arcadia Office, Della Snyder-Velto	Sensitive Species and ESA Section 7	07/17/2008	Meeting	Discussed Biological Surveys, ESA Section 7, Biological Assessment, and Consultations.
US Fish and Wildlife Service, Hopper Mountain NWR Complex, Chris Barr	CA Condor	07/21/2008	Email	USFWS provided zip file containing GIS shapefile of all GPS records since 2005 within the Project area.
US Forest Service, Angeles National Forest, Patricia Krueger	RCAs	07/31/2008	Email	USFS provided Forest Service Handbook on Soil and Water Conservation
Bureau of Land Management, Ridgecrest Field Office, Linn Gum	Mohave ground squirrel	08/01/2008	Email	Discussed the MGS and review of the West Mojave Plan conclusively shows the area of interest for the BR RTP is not contained within the lands designated by MGS conservation area.
US Forest Service, Marian Kadota	CA Condor	08/01/2008	Email	Discussed the Federally listed CA Condor and impact of power line.
US Forest Service, Angeles National Forest, Patti Krueger	Avian Risk Assessment Report	09/04/2008	Email	A request had been submitted to USFS by Power for the missing figures and maps of the Avian Risk Assessment Report USFS provided as an example. Patti indicated that the missing information would not be available until mid-December.
US Forest Service, Angeles National Forest, Nathan Sill	RCAs	09/05/2008	Email	USFS provided additional data regarding the RCAs. This included GIS files, reports and clarification to questions regarding the 5-step process in identifying RCAs for BR RTP
US Fish and Wildlife Service, Della Snyder-Velto	Avian Risk Assessment	09/12/2008	Email	USFWS provided resource contact information to help with locating data and assessing risk for avian species.
USFS, Angeles National Forest, Nathan Sill	RCAs and Biological surveys	10/22/2008	Meeting	Update on the progress of the biological surveys and reports. Also discussed RCA's.
USFS, Angeles National Forest, USFWS, and BLM	RCAs, biological surveys, and USFWS consultations	11/25/2008	Meeting	Discussed results of biological surveys and approach to Section 7 consultations.
USFS, ANF and USFWS	Bio Tech Report, BA and schedule	10/29/2009	Meeting	Discussed Bio tech report comments and BA schedule, including data needs.

Agency	Study Component	Date	Type of Contact	Summary
USFS, ANF	RCAs	12/09/2009	Meeting	Discussed Riparian Conservation Area Surveys
USFS, ANF	RCAs	01/06/2010	Field visit	Field visit with ANF Biologist Nathan Sill to review/refine RCA buffers along Segment G.
ANF, BLM, USFWS	Biological surveys, USFWS consultations	03/18/2010	Meeting	Discussed results of 2009 biological surveys and Biological Assessment
ANF, BLM, USFWS	Biological Assessment, Avian Protection Plan, Section 7 Consultation Schedule	08/24/2010	Meeting	Discussed Biological Assessment and data needs. Also discussed the Avian Protection Plan.
US Fish and Wildlife Service, Della Snyder-Velto	Cumulative analysis and data needs for the biological assessment	03/30/2011	Email	USFWS provided guidelines and examples on how to develop the cumulative impact section

After early consultation with the Service in 2008, a list of sixteen species that may be affected by the Project was produced (species list # 2008-SL-0346, dated May 1, 2008). This Biological Assessment addresses the effects of the proposed Project on these sixteen species listed in Table 2.

TABLE 2. SPECIES POTENTIALLY AFFECTED

Common Name	Scientific Name	Federal Status	Presence in Project Site
PLANTS			
California orcutt grass	<i>Orcuttia californica</i>	Endangered	Absent
Nevin's barberry	<i>Berberis nevinii</i>	Endangered	Known to occur
Slender-horned spineflower	<i>Dodecahema leptoceras</i>	Endangered	Potential to occur
Spreading navarretia	<i>Navarretia fossalis</i>	Threatened	Absent
BIRDS			
California condor	<i>Gymnogyps californianus</i>	Endangered	Present
Coastal California gnatcatcher	<i>Poliophtila californica</i>	Threatened, Critical Habitat	Present
Southwestern willow flycatcher	<i>Empidonax traillii eximius</i>	Endangered, Critical Habitat	Potential to occur
Least Bell's vireo	<i>Vireo bellii pusillus</i>	Endangered	Present
Yellow-billed cuckoo	<i>Coccyzus americanus</i>	Candidate	Potential to occur
REPTILE			
Desert Tortoise	<i>Gopherus agassizii</i>	Threatened	Present

Common Name	Scientific Name	Federal Status	Presence in Project Site
AMPHIBIANS			
California red-legged frog	<i>Rana draytonii</i>	Threatened, Critical Habitat	Potential to occur
Arroyo toad	<i>Anaxyrus californicus</i>	Endangered, Critical Habitat	Potential to occur
FISH			
Unarmored threespine stickleback	<i>Gasterosteus aculeatus williamsoni</i>	Endangered	Potential to occur
Santa Ana sucker	<i>Catostomus santaanae</i>	Threatened	Absent
INVERTEBRATES			
Riverside fairy shrimp	<i>Streptocephalus woottoni</i>	Endangered	Absent
Vernal pool fairy shrimp	<i>Branchinecta lynchi</i>	Threatened	Absent

3.0 CURRENT MANAGEMENT DIRECTION

Management direction for threatened, endangered, protected and sensitive species (TEPS) on the Forest comes from the Angeles National Forest Land Management Plan (LMP) adopted by the Record of Decision signed on September 20, 2005 (USFS 2005). Strategic Goals, Program Strategies and Tactics, Standards, and Appendices A-J of the LMP provide guidance on management of wildlife and botany resources.

Specific direction related to protection of TEPS species comes from Standards 11-44 (Record of Decision [ROD] Part 3, pages 6-10). Appendix B (Record of Determination) includes a summary of species guidance recommendations. These species guidance documents include information to assist in the development of project-specific design criteria (summarized from Land Management Plan, Appendix H).

Direction for management of wildlife and botany resources included in the Forest Service Manual includes the following:

3.1 FOREST SERVICE MANUAL (FSM) DIRECTION (T&E SPECIES):

1. Place top priority on conservation and recovery of endangered, threatened, and proposed species and their habitats through relevant National Forest System, State and Private Forestry, and Research activities and programs.
2. Establish through the Forest planning process objectives for habitat management and/or recovery of populations, in cooperation with States, the FWS, and other Federal agencies.
3. Through the Biological Assessment process, review actions and programs authorized, funded, or carried out by the Forest Service to determine their potential for effect on threatened and endangered species and species proposed for listing.
4. Avoid all adverse impacts on threatened and endangered species and their habitat except when it is possible to compensate adverse effects totally through alternatives identified in a biological opinion rendered by the FWS, when an exemption has been granted under the Act, or when the FWS biological opinion recognizes an incidental taking. Avoid adverse impacts on species proposed for listing during the conference period and while their Federal status is being determined.

5. Initiate consultation or conference with the FWS or National Marine Fisheries Service (NMFS) when the Forest Service determines that proposed activities may have an adverse effect on threatened, endangered, or proposed species or when Forest Service projects are for the specific benefit of a threatened or endangered species.
6. Identify and prescribe measures to prevent adverse modification or destruction of critical habitat and other habitats essential for the conservation of endangered, threatened, and proposed species. Protect individual organisms or populations from harm or harassment as appropriate.

3.2 NATIONAL FOREST MANAGEMENT ACT (NFMA) FOR ALL SPECIES

The National Forest Management Act (NFMA) of 1976 states that “fish and wildlife habitat shall be managed to maintain viable populations of existing native and desired non-native vertebrate species in the planning area.” For planning purposes, a viable population shall be regarded as one which has the estimated numbers and distribution of reproductive individuals to ensure its continued existence is well-distributed in the planning area. In order to ensure that viable populations will be maintained, habitat must be provided to support at least a minimum number of reproductive individuals and that habitat must be well-distributed so that those individuals can interact with others in the planning area (36 CFR 219.19).

The regulations also mandate that “all management prescriptions shall provide for adequate fish and wildlife habitat to maintain viable populations of existing native vertebrate species and provide that habitat for species chosen under 219.19 is maintained and improved to the degree consistent with multiple-use objectives established in the plan” (36 CFR 219.27(a)(6)).

Diversity states in part: “Management prescriptions, where appropriate and to the extent practicable, shall preserve and enhance the diversity of plant and animal communities, including endemic and desirable naturalized plant and animal species” (36 CFR 219.27(g)).

3.3 LAND MANAGEMENT PLAN STANDARDS

The following standards are taken from Part 3 of the LMP and are applicable to impacts to plants and wildlife as described below for the BRRTP (USFS 2005, Part 3, pages 3 – 13).

- **S4:** Design fuelbreaks in forests to be open; averaging no more than 40 percent crown closure along the center corridor with an understory of grasses, forbs, and small shrubs. Thinning of forests should favor retention of large-diameter trees. Crown closure and understory vegetation increase gradually, moving from the inside toward the outside of the shaded fuelbreak.
- **S6:** Seed to be used on National Forest System lands will be certified to be free of noxious weeds. Where available, only locally collected native seed will be used, or seeds will be used from species that are noninvasive and nonpersistent. When available, wattles, mulch and livestock feed to be used on National Forest System lands will be certified to be free of noxious weeds.
- **S7:** There are extensive areas within and adjacent to the national forests of southern California meeting the definition of Wildland/Urban Interface (WUI) as described in the Healthy Forests Restoration Act of 2003. WUI (as defined by the Act) is a variable width up to 1.5 miles from communities at risk or as defined in individual community fire protection plans. This forest plan further identifies a direct protection buffer (WUI Defense Zone) and an indirect protection buffer (WUI Threat Zone) that fall within the broader definition WUI. A WUI Defense Zone is the area directly adjoining structures and evacuation routes that is converted to a less-flammable state to increase defensible space and firefighter safety. The WUI Threat Zone is an additional strip of vegetation modified to reduce flame heights and radiant heat. The Threat Zone generally extends approximately 1.25 miles out from the Defense Zone boundary. Yet, actual extents of Threat Zones are based on fire history, local fuel conditions, weather, topography, existing and proposed fuel treatments, and natural barriers to fire and community protection plans, and therefore could

extend well beyond the 1.25 mile. The two zones together are designed to make most structures more defensible.

- **S8:** Community protection needs within the WUI Defense Zone take precedence over the requirements of other forest plan direction, including other standards identified in Part 3 of the forest plan. If expansion beyond the 300-foot minimum width of the defense zone is needed due to site-specific conditions, projects will be designed to mitigate effects to other resources to the extent possible.
- **S11:** When occupied or suitable habitat for a threatened, endangered, proposed, candidate or sensitive (TEPCS) species is present on an ongoing or proposed project site, consider species guidance documents (see [LMP Part 3] Appendix H [pages 71 – 75]) to develop project-specific or activity-specific design criteria. This guidance is intended to provide a range of possible conservation measures that may be selectively applied during site-specific planning to avoid, minimize or mitigate negative long-term effects on threatened, endangered, proposed, candidate or sensitive species and habitat. Involve appropriate resource specialists in the identification of relevant design criteria. Include review of species guidance documents in fire suppression or other emergency actions when and to the extent practicable.
- **S12:** When implementing new projects in areas that provide for threatened, endangered, proposed, and candidate species, use design criteria and conservation practices (see [LMP Part 3] Appendix H [pages 71 – 75]) so that discretionary uses and facilities promote the conservation and recovery of these species and their habitats. Accept short-term impacts where long-term effects would provide a net benefit for the species and its habitat where needed to achieve multiple-use objectives.
- **S13:** Manage Critical Biological land use zones so that activities and discretionary uses are either neutral or beneficial for the species and habitats for which the area was established. Accept short-term adverse impacts to threatened, endangered, and proposed species if such impacts will be compensated by the accrual of long-term benefits to habitat for threatened, endangered, and candidate species.
- **S15:** Within riparian conservation areas retain snags and downed logs unless they are identified as a threat to life, property, or sustainability of the riparian conservation area.
- **S18:** Protect known active and inactive raptor nest areas. Extent of protection will be based on proposed management activities, human activities existing at the onset of nesting initiation, species, topography, vegetative cover, and other factors. When appropriate, a no-disturbance buffer around active nest sites will be required from nest-site selection to fledging.
- **S19:** Protect all spotted owl territories identified in the Statewide California Department of Fish and Game database (numbered owl sites) and new sites that meet the state criteria by maintaining or enhancing habitat conditions over the long-term to the greatest extent practicable while protecting life and property. Use management guidelines in the species conservation strategy (or subsequent species guidance document; see [LMP Part 3] Appendix H [pages 71 – 75]) to further evaluate protection needs for projects, uses and activities.
- **S20:** Maintain a limited operating period (LOP) prohibiting activities within approximately .25 miles of a California spotted owl nest site, or activity center where nest site is unknown, during the breeding season (February 1 through August 15), unless surveys confirm that the owls are not nesting. Follow the USDA Forest Service (1993, 1994 or subsequent) protocol to determine whether owls are nesting. The LOP does not apply to existing road and trail use and maintenance, use of existing developed recreation sites, or existing special-uses, such as recreation residence tracts. When evaluating the need to implement a limited operating period, site- and project-specific factors need to be considered (use species management strategy or subsequent guidance; see [LMP Part 3] Appendix H [pages 71 – 75]).
- **S21:** California spotted owl habitat that is lost to development for a compelling reason should be mitigated up to a two-to-one basis considering quality of habitat lost, number of territories affected, reproductive history of pair(s) displaced, location, and related factors. Development includes ski area creation or expansion, new roads or trails, special-use sites and corridors, new

recreation or administrative facilities, land exchanges, etc. Mitigation land should be sought first within the mountain range where the impacts occur; if this is not possible, mitigation land should be acquired within the San Gabriel or San Bernardino Mountains.

- **S22:** Except where it may adversely affect threatened and endangered species, linear structures such as fences, major highways, utility corridors, bridge upgrades or replacements, and canals will be designed and built to allow for fish and wildlife movement.
- **S24:** Mitigate impacts of on-going uses and management activities on threatened, endangered, proposed, and candidate species.
- **S25:** Conduct road and trail maintenance activities during the season of year that would have the least impact on threatened, endangered, and proposed wildlife species in occupied habitats, except as provided by site-specific consultation.
- **S27:** Use seasonal closures as specified by site-specific analysis to protect occupied bald eagle wintering, breeding, or nesting habitat.
- **S28:** Avoid or minimize disturbance to breeding and roosting California condors by prohibiting or restricting management activities and human uses within 1.5 miles of active California condor nest sites and within 0.5 miles of active roosts. Refer to California condor species account (or subsequent species guidance document; see [LMP Part 3] Appendix H [pages 71 – 75]) for additional guidance.
- **S31:** Design new facilities or expansion of existing facilities to direct public use away from occupied habitat for threatened, endangered, proposed and candidate species.
- **S32:** When surveys for species presence/absence are done for threatened, endangered, and proposed species, use established survey protocols, where such protocols exist.
- **S37:** Design and manage fuel treatments to minimize the risk that treated areas will be used by unauthorized motorized and mechanized vehicles. Mitigate impacts where such use does occur.
- **S38:** Avoid establishment of staging areas, helibases, base camps, firelines or other areas of human concentration and equipment use within threatened, endangered and proposed species suitable and occupied habitats and riparian areas to the maximum extent possible when suppression of wildland fire and human safety are not compromised.

4.0 PROPOSED ACTION

4.1 TRANSMISSION LINE DESIGN AND CONSTRUCTION ACTIVITIES

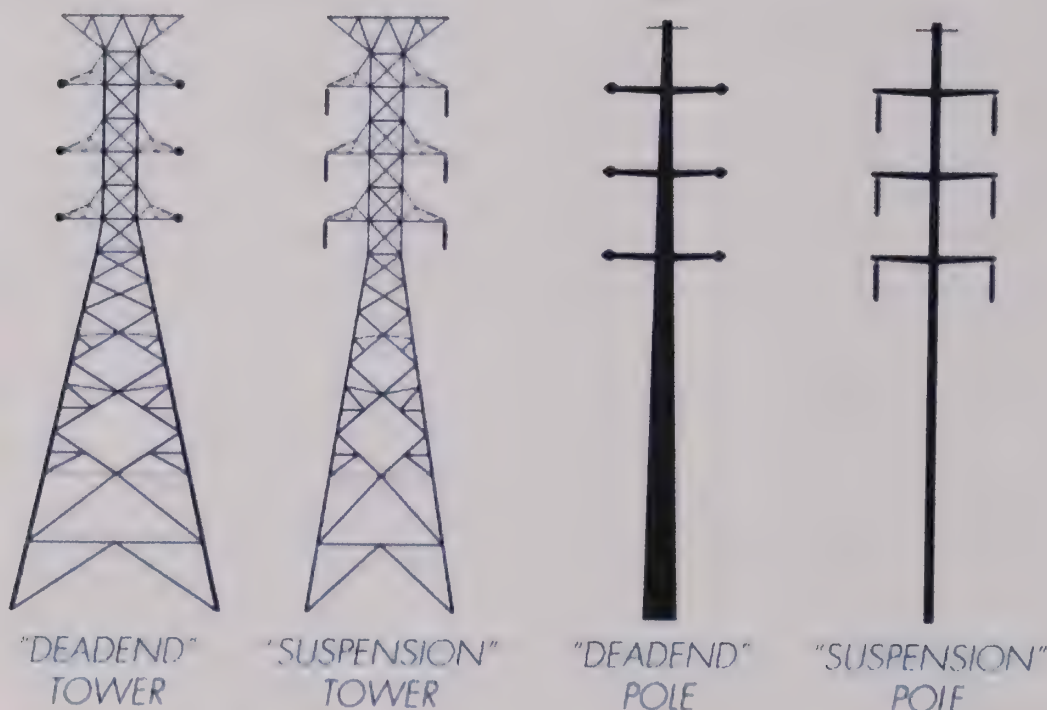
4.1.1 Component 1 – Construction of New 230 kV Double-Circuit Transmission Line

The proposed double-circuit 230 kV transmission line component of the BR RTP would consist of two alternating current (AC) circuits from the Barren Ridge Switching Station to the proposed Haskell Canyon Switching Station in Haskell Canyon.

The proposed structures for the new transmission line would primarily be self-supporting double-circuit steel lattice towers fabricated from galvanized steel members, as shown on the left side of Figure 2. Depending on the environmental conditions of the surrounding terrain, the height of the proposed lattice structures would range from 110 to 195 feet, with an average tower-to-tower span of 1,000 to 1,100 feet. Appendix F lists the structure specifications for the number of structures per mile, average span length, and average heights for towers and components. Exact structure placement would be determined during engineering surveys and detailed design studies for the selected Alternative route following the Record of Decision (ROD) on the EIS/EIR. A variety of engineering, constructability, existing access, and environmental issues would be considered during detailed structure siting within the permitted right-of-way (ROW).

“Dead-end” towers of self-supporting, steel-lattice design would be required periodically to add longitudinal strength along the line. Dead-end towers would also be used at turn (angle) locations along the line, at heavily loaded tower locations, and at specific utility crossings (e.g., other transmission lines) for added safety. Dead-ended towers are of the same basic configuration as suspension towers (non-angle structures), the difference being in the tower “arms,” insulator systems, and tower weights.

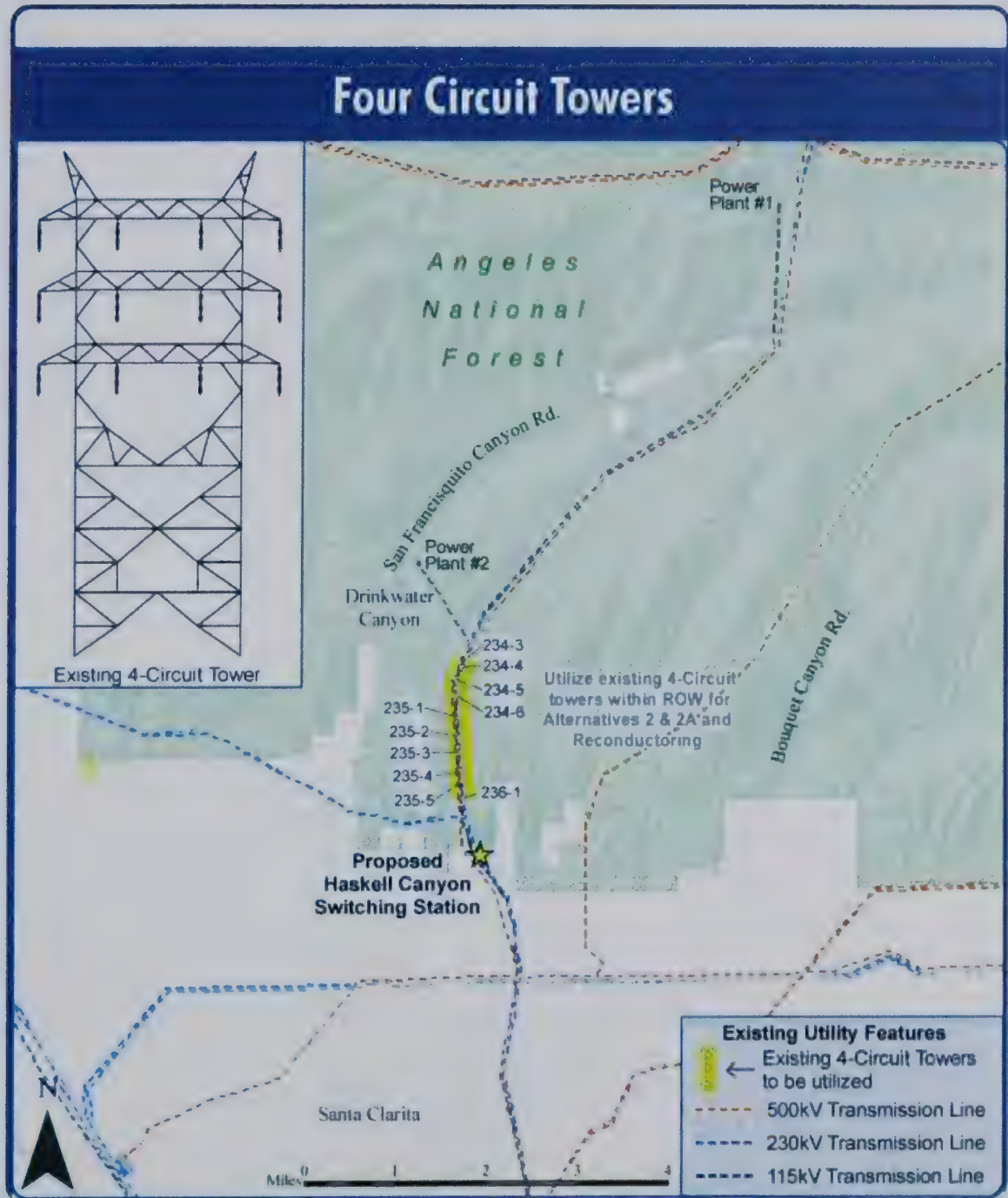
FIGURE 2. TYPES OF TOWERS



Self-supporting, tubular steel poles (TSP) have been proposed by LADWP as an available mitigation structure where appropriate to reduce potential impacts, such as conflicts with cultivation on agricultural lands. The TSPs can reduce impacts in some cases due to a smaller footprint than the proposed self-supporting steel lattice structures; however, more TSPs per mile are necessary due to a shorter average span between structures. The TSPs would have an average height range between 95 and 180 feet, depending on the conditions of the surrounding terrain, with an average tower-to-tower span of 700 to 800 feet. Refer to Figure 2 for an illustration of the double-circuit poles.

For the majority of the alignment, the two new 230 kV circuits would be placed on new double-circuit transmission towers, but for approximately 1.5 miles, the circuits would be placed on existing four-circuit structures that are located just north of the proposed Haskell Canyon Switching Station. Between where the existing BR-RIN crosses Dry Canyon to the intersection of the Castaic transmission lines, LADWP has existing four-circuit towers with three vacant positions. The existing towers would be utilized in this section for the proposed 230 kV double circuit transmission line instead of constructing new towers. See Figure 3 for the location and illustration of the existing four-circuit towers to be utilized.

FIGURE 3. FOUR-CIRCUIT TOWERS TO BE UTILIZED



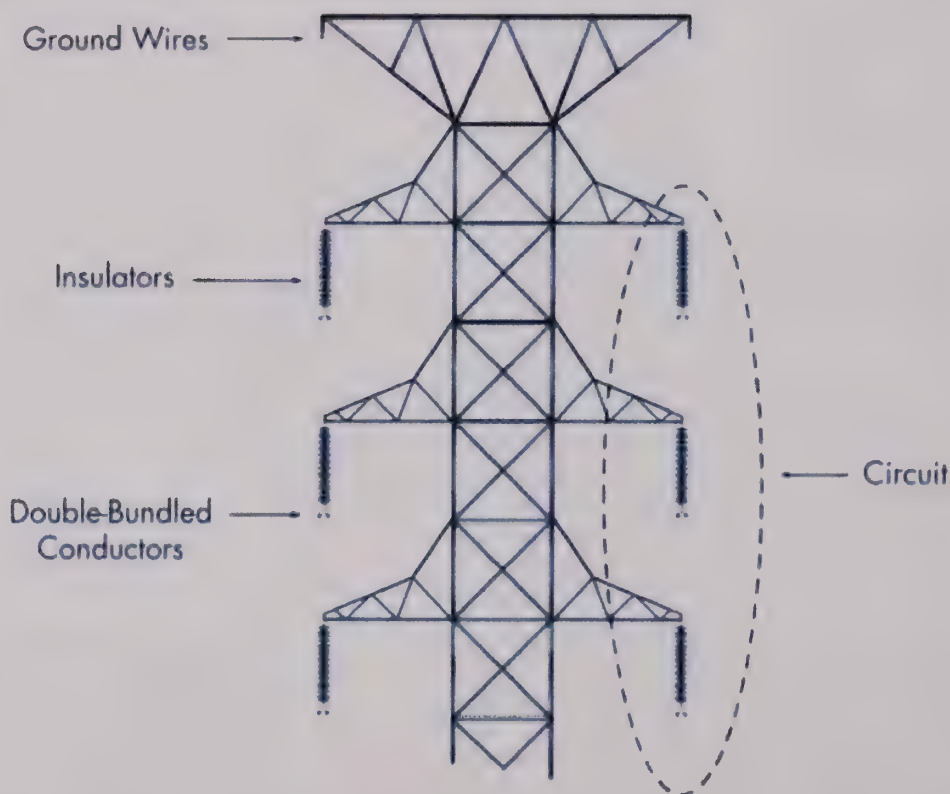
BARREN RIDGE RENEWABLE TRANSMISSION PROJECT



The self-supporting steel lattice structures and TSPs would utilize concrete foundations. Steel lattice structures would require four footings (one for each leg); TSPs would require single footings. Footings would be steel-reinforced concrete pier type and be cast in place. The typical design for the concrete footings for lattice structures would be between 2.5 and 5.0 feet in diameter, with an average depth of 20 feet depending on soil conditions. Typical design for single foundations for TSPs would include augured holes approximately five to seven feet in diameter and 15 to 30 feet deep, depending on conditions. Formwork steel reinforcing would be assembled in the hole prior to casting concrete in place. Reinforcing steel would become integral to the lower leg of the steel lattice structure during assembly. An above-ground concrete form placed over each hole would result in a final concrete foundation height of 0.5 to 2.0 feet above ground level.

As illustrated in Figure 4, Typical Tower Components, each tower carries conductors ("wires"), insulators, and ground wires. The conductor being considered for the new double-circuit 230 kV transmission line and installation of the Castaic – Haskell Canyon #4 circuit on existing structures is a bundled 715.5 kcmil "Starling" ACSS/AW. The reconductoring of the BR-RIN transmission line between Barren Ridge Switching Station and Rinaldi Substation would require a bundled 1,433.6 kcmil "Merrimack" ACSS/TW/HS conductor.

FIGURE 4. TYPICAL TOWER COMPONENTS



Each circuit would consist of three phases ("wires") as illustrated in Figure 4. To increase the current-carrying capability of the transmission lines and reduce power loss, the Proposed Action would utilize bundled conductors installed for each phase. The bundled conductors would consist of two conductor cables connected by a spacer. The new 230 kV double-circuit transmission line would consist of a total of six double-bundled (12 individual) wires.

Minimum conductor height above the ground, under normal operation of the line, is 30 feet. Greater clearances may be required in certain areas to allow for clearances over trees or other vegetation that could pose a risk to the operation of the transmission line. Minimum conductor clearance would dictate the exact height of each tower based on topography and safety clearance requirements.

Insulators are used to provide the physical connection of conductors to structures. These system components are made of very low conducting materials (polymer insulators) that inhibit the flow of electric current from energized conductors to ground or to other energized system elements. Insulators and their associated hardware are to be configured in an "I" assembly to support conductors while maintaining required distances between phases and grounded structures. Each "I" string would consist of six-inch diameter insulators between six and eight feet long.

To shield conductors from hazard of direct lightning strikes by transferring lightning currents into the ground, overhead ground wires (shield wires) or fiber optic ground wire would be installed on top of new structures.

Construction of a transmission line involves the following general sequence of events: surveying activities; identifying and constructing access roads; clearing ROW and tower sites (including construction yards and batch plants); installing foundations; assembling and installing the towers; clearing, pulling, tensioning, and splicing; installing ground wires and conductors; installing counterpoise; switching station tie-in; and site upkeep and site reclamation. Various phases of construction would occur at different locations throughout the construction process for the BR RTP. This would require several contractors operating at the same time and in different locations. Refer to Appendix F for a description of each construction activity.

Existing paved and unpaved highways and roads would be used where possible. Roads along existing utility corridors would also be used where possible to minimize new access road construction. In locations where existing roads could be used, that are located in close proximity to the proposed or existing ROW centerlines, only new spur roads to the tower sites would be constructed. The specific locations and design of all new access and spur roads would be determined during final Project design.

It is anticipated that one or two construction yards or staging areas would be required for materials storage, construction equipment, construction vehicles, and temporary construction offices. Staging areas would be approximately five acres in size, and located centrally or near each end of the transmission line route. The staging areas would likely be located on previously disturbed land and would be level and surfaced with crushed aggregate base. The LADWP would negotiate with landowners for specific locations of the staging areas.

Three-Circuit Tower Mitigation

In areas where there are ROW expansion constraints and where LADWP has existing 230 kV transmission lines, LADWP is proposing to construct three-circuit towers within the existing ROW to carry the existing BR-RIN circuit and the two proposed Barren Ridge to Haskell Canyon (BR-HC) circuits. This would avoid various impacts, including the acquisition of residential property in the unincorporated communities of Willow Springs (milepost 27.1 to 27.6), Elizabeth Lake, and Green Valley (milepost 44.6 to 51.7). Refer to Figure 5 for an illustration of three-circuit tower types, and to Figure 6, the Three-Circuit Tower Mitigation Map, for proposed locations.

FIGURE 5. THREE-CIRCUIT TOWER TYPES

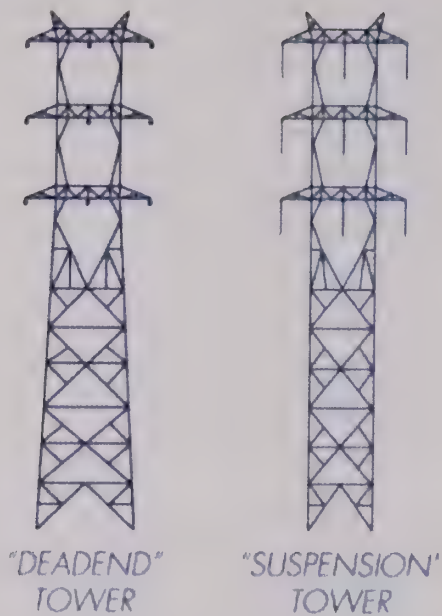


FIGURE 6. THREE-CIRCUIT TOWER MITIGATION



BARREN RIDGE RENEWABLE TRANSMISSION PROJECT



LADWP must maintain the electrical service along the existing BR-RIN transmission line to avoid impacts to the hydroelectric power plants north of the Barren Ridge Switching Station. Therefore, a temporary transmission line would be constructed to keep the BR-RIN circuit energized during construction of the three-circuit towers. After the temporary line is constructed, the existing BR-RIN single-circuit towers would be removed to allow the new three-circuit towers to be constructed within the existing ROW. Once construction of the three-circuit towers is completed, the temporary transmission line would be removed.

The temporary transmission line would be 7.5 miles long and would consist of wood and steel single poles with an average height of 95 feet, a 3-foot by 3-foot footprint, and an average of eight poles per mile. Construction would occur within a temporary 80- to 100-foot ROW. The majority of the temporary transmission line would be constructed along San Francisquito Road. Portions would also be constructed along Elizabeth Lake Road and Johnson Road. Pole placement would be adjacent to public roadways wherever possible. If necessary, temporary ROW on private property would be needed where poles could not be placed within public road ROW. The majority of poles would be direct-embedded when set in place and would not require a permanent foundation. Where additional strength is necessary at larger angle points, steel poles would be required, which could require an excavation approximately 6 feet in diameter by 20 feet deep to accommodate the concrete pier foundation that would be cast in place. Once all the poles have been constructed and the conductor installed, the existing BR-RIN circuit would be connected into the temporary line and energized. The construction would require establishment of a staging area, work areas around poles, and pull and tension sites. Access to pole sites and pull and tension sites would be from the adjacent roadways.

Approximately seven miles of the existing BR-RIN single-circuit towers would be removed, with existing ROW utilized to access the existing towers. The new three-circuit towers would be placed within the existing ROW, utilizing existing access roads. Helicopter Mitigation, as described in this section below, would be applied in steeper terrain if additional access is required. The new three-circuit tower would require a 25-foot by 30-foot structure footprint and an average of seven structures per mile; the average structure height would be 170 feet, with a maximum tower-to-tower span length of 780 feet. The construction process for the new three-circuit towers would be the same as the double-circuit towers discussed above. After completion of construction of the three-circuit towers, the temporary transmission line would be removed and all temporary staging and work area land disturbances would be restored as close to previous conditions as possible and revegetated as required.

Helicopter Mitigation

Within the ANF where the terrain is steep and access is limited, the USFS would require that the new double-circuit 230 kV structures be constructed with the use of helicopters (such as the Hughes 500 or Bell 212, or Sikorsky Skycrane). Although no specific locations for this mitigation have been identified for the Proposed Action, it is expected USFS would require the helicopter mitigation for construction in any area more than 300 feet from an existing road and with slopes greater than approximately 25 percent. The use of helicopters for the construction of transmission tower structures would eliminate the need for new access roads to structure locations, and would therefore minimize land disturbance associated with crane pads, structure laydown areas, and the trucks and tractors used for delivery of structures to sites. However, the following site and ground disturbing construction activities would be required to construct the new transmission line within the identified helicopter construction areas: portable landing pads, helicopter fly yards/staging areas and associated access roads, tower structure vegetation clearing, guard structures at major crossings, and access road pullouts.

Temporary 24-foot wide access roads would be required to access the helicopter fly yards/staging areas. The transmission line materials (tower steel, conductor reels, structure hardware, etc.) would be delivered by truck to the helicopter fly yards/staging areas. Vegetation clearing may be required at these sites to ensure safe working conditions. The fly yards/staging areas would serve as helicopter support yards for

fueling and maintenance, as well as for the transport of materials and personnel. Towers may also be assembled in sections at these yards prior to delivery to the tower sites. Heavy lift helicopters would then fly the towers from the yards to the tower sites.

Portable landing pads would be located at each tower site. These pads would allow helicopters to load and unload personnel, tools, and equipment necessary for construction of foundations and assembly of tower structures. Helicopter-constructed towers that would not be in close proximity to existing access roads would utilize micropile foundations. For each tower leg, micropile foundations would use a group of three to eight 6- to 9-inch diameter casings that would be drilled and grouted into the ground. The exposed portion of the pile group would be encased in a reinforced concrete cap from the top of the casings to a depth anywhere from one to eight feet below the ground surface, depending on the terrain.

Conductor installation would proceed in the same manner as the double-circuit tower installation. The equipment necessary for conductor installation would be large, heavy construction equipment that could only be brought in by truck. Some National Forest System (NFS) roads could need maintenance or improvement to allow pulling and tensioning, but no new access or spur roads would be created for conductor installation on the helicopter-constructed towers. After project completion, any maintained access roads to helicopter fly yards/staging areas would be reduced to 16 feet.

4.1.2 Component 2 - Addition of New 230 kV Circuit

Between the proposed Haskell Canyon Switching Station and the existing Castaic Power Plant, LADWP proposes the addition of 12 miles of a new 230 kV transmission circuit onto existing Castaic – Olive 230 kV Transmission Line structures. The circuit would cross the unincorporated communities of Castaic and Saugus and the city of Santa Clarita. A total of 300 feet of BLM-managed public lands and four miles of NFS lands would be traversed; however, the new circuit would not require a new or additional ROW. This new circuit would be called Castaic – Haskell Canyon #4 and would utilize the same conductor (bundled 715.5 kcmil “Starling” ACSS/AW [aluminum conductor steel supported/aluminum-clad steel wire]) as that proposed for the new 230 kV transmission line between Barren Ridge and Haskell Canyon Switching Stations.

The addition of a new circuit on existing towers would require many of the same construction activities associated with a new transmission line (refer to Appendix F for a description of each construction activity). However, all work would be within existing ROW and no new towers would be constructed. Some towers may need to be modified or reinforced to carry the additional weight of the new conductor. Specific towers requiring reinforcement would be determined following detailed design of the Project. Tower reinforcement would not alter the general design or the location of the structures. This process would generally include reinforced foundations or steel member replacements. Refer to Figure 1 for a map showing the location of the new 230 kV circuit.

4.1.3 Component 3 - Reconductoring of Existing Transmission Line

LADWP proposes the reconductoring of 76 miles of the existing BR-RIN 230 kV transmission line with larger conductors from the Barren Ridge Switching Station to Rinaldi Substation. Four miles of BLM-managed public lands, 13 miles of NFS lands, and 44 miles of private property would be traversed. The existing conductors (954/ 2,312 kcmil) would be replaced with a new 1,433.6 kcmil “Merrimack” ACSS/TW/HS (aluminum conductor steel supported/trapezoidal wires/high strength) conductor. The new conductor would have a larger diameter that allows for greater electrical capacity.

The upgrade of the existing BR-RIN would also require many of the same activities of the new transmission line (surveying of ROW, rehabilitation of existing access and spur roads, clearing of ROW, conductor installation, and cleanup). Removal of the existing conductor would be used to string a pulling line, and this line would then be used to pull in the new conductor. All work would remain within the

existing 250-foot-wide ROW, with no additional ROW required. Some of the towers would need to be modified, replaced, and/or have foundations reinforced or replaced to carry the additional weight of the new heavier conductor. Refer to Figure 1 for the location of the reconductoring.

4.1.4 Component 4 - Construction of New Switching Station

As a component of the BRRTP, LADWP proposes the construction of a new switching station in Haskell Canyon, south of the Angeles National Forest on LADWP-owned property at the convergence of several existing and proposed 230 kV transmission lines (the existing BR-RIN, the proposed double-circuit Barren Ridge – Haskell Canyon, existing Castaic – Northridge, Castaic – Sylmar, Castaic – Olive, and the proposed Castaic – Haskell Canyon). Refer to Figure 1 for the location of the new switching station.

The station would be approximately 500 feet by 600 feet to accommodate the necessary circuit positions, which are made up of equipment, such as steel support structures, circuit breakers, disconnect switches, and associated equipment, and a relay house and control house containing control and protective relaying equipment. The relay and control houses would each be approximately 30 feet long by 12 feet wide by 10 feet high and constructed of gray concrete block. The station yard would include a paved internal access road approximately 16 feet wide and would be enclosed by chain-link fencing with barbed-wire extension for security. The preliminary grading plan for the station is located in Appendix F.

Necessary pre-construction geotechnical investigation on-site would include six borings by a drill rig to investigate bedrock and soil stability and four cone penetration test locations after site grading to determine friction resistance for piers. The cone penetration test rig would be a small truck with a hydraulic ram assembly mounted on the back, which is used to push a 2.5-inch diameter cone into the ground to a depth up to 50 feet. Existing roads would be used to access the site.

Construction of the new Haskell Canyon Switching Station would consist of preconstruction surveys, clearing and grading of access roads, site grading and drainage development, installation of concrete foundations and steel support structures, installation of below- and above-ground electrical conduits for equipment power and control, installation of below- and above-grade grounding conductors, and installation of control and relay houses. Equipment required for station construction would include graders and excavators, backhoes, drill rigs, water trucks, scrapers, sheep's foot compactors, front end loaders, concrete trucks, trucks, and flatbed trailers. Cranes, man-lifts, portable welding units, line trucks, and mechanic trucks would also be required. Construction would require an estimated 12 months with approximately 60 workers.

Site preparation work for the station would involve clearing and grading of access roads, clearing of the switchyard site, the cut and fill grading of the site, and placement and compaction of structural fill that would serve as a base for switching station facilities. The site would be graded to maintain current drainage patterns as much as possible. A 16-foot-wide paved road and a 100-foot by 100-foot gravel parking area would be required. The yard would be covered with crushed-rock aggregate. Native vegetation would be re-established where possible outside the switchyard fence.

Following site grading and development, reinforced concrete foundations would be installed to support the steel structures and electrical equipment and control facilities. It is estimated that 1,500 cubic yards of concrete would need to be delivered to the switching station site for the foundations. Foundation work would require approximately 180 trips to the site by 40-ton, 10-yard capacity concrete trucks over a 120-day working period. Subsequent to the foundation installation, trenches would be dug to facilitate placement of copper conductors for the station grounding mat.

Multiple transmission lines would be terminated into the switching station (i.e., the new and existing Barren Ridge – Haskell and Castaic – Haskell Canyon transmission lines) and would need support and require the installation of galvanized steel structures. An existing 115 kV transmission line may need to

be relocated around the proposed station. High-voltage bus work consisting of aluminum jumpers and tubing would be installed within the station.

4.1.5 Component 5 - Expansion of Existing Switching Station

LADWP proposes expansion of the existing Barren Ridge Switching Station to the east side by 235 feet by 500 feet, for a total station size of 485 feet by 500 feet (approximately 5.6 acres). The expansion area of the station would include electrical structures and equipment for the addition of transmission lines, a material staging area, roadway within the station, and a drainage area. The preliminary design layout for the station may be found in Appendix F. Refer to Figure 1 for the location of the existing switching station.

Expansion of the existing switching station would be very similar to the construction of the Haskell Canyon Switching Station as described above. Expansion would consist of preconstruction surveys, site preparation and grading, installation of reinforced concrete foundations, installation of electrical conduits for equipment power and control, and installation of structures and equipment.

Necessary pre-construction geotechnical on-site investigation would include two test pits excavated by a backhoe to investigate soil density and settlement, and four cone penetration test locations on-site to determine friction resistance for piers. The cone penetration test rig would be a small truck with a hydraulic ram assembly mounted on the back, which is used to push a 2.5-inch diameter cone into the ground to a depth up to 50 feet. Existing roads would be used to access the site.

It is estimated that 700 cubic yards of concrete would need to be delivered to the switching station site for the foundations. Foundation work would require approximately 80 trips to the site by 40-ton, 10-yard capacity concrete trucks over a 90-day working period. Equipment required for station construction would include graders and excavators, backhoes, drill rigs, water trucks, scrapers, sheep's foot compactors, front end loaders, concrete trucks, trucks, and flatbed trailers. Cranes, man-lifts, portable-welding units, line trucks, and mechanic trucks would also be required. An estimated eight months with approximately 60 workers would be required to expand the station.

4.1.6 Project-Wide Mitigation Measures

To address potential impacts of the Proposed Project to multiple resource areas as discussed above, the following project-wide mitigation measure would be applied:

Three-Circuit Tower Mitigation (THREE-CIRCUIT) – A three-circuit lattice tower design would be implemented as described in Section 4.1.1 of this report, at the locations shown in Figure 6, Three-Circuit Tower Mitigation Map.

Helicopter Mitigation (HELICOPTER) – Helicopter Mitigation shall be implemented, as described in Section 4.1.1 of this report, in steep areas of the Angeles National Forest where access is limited. During final design of the Project, areas may be identified for helicopter construction of the towers. This determination would generally be made where tower sites have no existing access roads within 300 feet and slopes are greater than 25 percent. Final identification of these tower sites would be determined and agreed upon by the Forest Service, BLM and LADWP.

4.2 GENERAL PRACTICES AND SPECIFIC MITIGATION MEASURES

The following tables describe proposed General Practices (GPs) and specific mitigation measures to reduce the impact of effects that may be generated by construction of the BR RTP. These were written in collaboration with ANF and BLM staff and apply to preconstruction, construction, and post-construction

aspects of the Project. The GPs were written for all resources of the Project. Because not all of these are applicable to biology, ones that do not apply to biology have been removed and show “*not applicable*” in the table below. The entire list can be viewed in the BR RTP Draft Environmental Impact Statement/Environmental Impact Report (DEIS/EIR) (USFS, BLM, and LADWP 2011b).

The mitigation measures are specific to biology and are in response to various impacts that could occur to vegetation, wildlife, and/or habitat. Some impacts do not have respective mitigation measures, as noted in Table 4 below.

TABLE 3. GENERAL PRACTICES

Plans	
GP-1	Plan of Development & Construction, Operation and Maintenance Plans. In consultation with the USFS and BLM Authorizing Officers prior to construction, LADWP shall develop a Construction, Operation and Maintenance Plan (COM Plan) with the USFS and Plan of Development (POD) with BLM. These plans shall be attached to and become a part of the Special Use and Right-of-Way Authorizations. The COM Plan and POD shall include, at a minimum, road maintenance specifications, vegetation treatment and rehabilitation specifications, and conditions on maintenance and replacement of improvements. The agencies may combine the POD and COM plans into a single document for the Project.
GP-2	Traffic Control Plan. Prior to the start of construction, LADWP shall submit a Traffic Control Plan (TCP) to agencies with jurisdiction over public roads that would be directly affected by construction activities (where road closures or encroachments would be necessary). The Plan shall define the locations of all roads that would need to be temporarily closed due to construction activities, and also define the use of flag persons, warning signs, lights, barricades, cones, etc. for each construction closure. The plan shall include measures to avoid disruptions or delays in access for emergency service vehicles and to keep emergency service agencies informed of road closures, detours, and delays. Police departments, fire departments, ambulance services, and paramedic services shall be notified in advance of each closure by LADWP. The Plan shall also include contact information for those agencies, assign responsibility for notifying the service providers, and specify coordination procedures. Copies of the Plan shall be provided to all affected police departments, fire departments, ambulance and paramedic services.
GP-3	Hazardous Materials/Waste Management Plan. A project-specific hazardous materials management and hazardous waste management program will be developed prior to initiation of the project. The program will outline proper hazardous materials use, storage and disposal requirements as well as hazardous waste management procedures. The program will identify types of hazardous materials to be used during the project and the types of wastes that will be generated. All project personnel will be provided with project-specific training. This program will be developed to ensure that all hazardous materials and wastes were handled in a safe and environmentally sound manner. Hazardous wastes will be handled and disposed of according to applicable rules and regulations. Employees handling wastes will receive hazardous materials training and shall be trained in hazardous waste procedures, spill contingencies, waste minimization procedures and Treatment, Storage and Disposal Facility (TSDF) training in accordance with OSHA Hazard Communication Standard and 22 CCR. If degraded soil or groundwater is encountered during excavation (e.g., there is an obvious sheen, odor, or unnatural color to the soil or groundwater), it shall be excavated, tested, and disposed of in accordance with state hazardous waste disposal requirements. The Plan shall also include procedures detailing emergency responses to releases of hazardous materials. It will prescribe hazardous materials handling procedures for reducing the potential for a spill during construction, and will include an emergency response program to ensure quick and safe cleanup of accidental spills. All hazardous materials spills or threatened release, including petroleum products such as gasoline, diesel, and hydraulic fluid, regardless of the quantity spilled, will be immediately reported to the appropriate agency as outlined in the Plan if the spill has entered a navigable water, stream, lake, wetland, or storm drain, if the spill impacted any sensitive area including conservation areas and wildlife preserves, or if the spill caused injury to a person or threatens injury to public health. All construction personnel, including environmental monitors, will be aware of state and federal emergency response reporting guidelines.
GP-4	Health and Safety Plan. A Health and Safety Plan shall be prepared and implemented. The Plan shall address emergency medical services available on-site and within the project area. The Plan shall also address specific emergency response and evacuation measures.

GP-5	Stormwater Pollution Prevention Plan. A project-specific Construction Stormwater Pollution Prevention Plan (SWPPP) will be prepared and implemented prior to the start of construction. The SWPPP will utilize Best Management Practices (BMPs) to address the storage and handling of hazardous materials and sediment runoff during construction activities.
GP-6	Spill Prevention, Countermeasure, and Control Plan. LADWP will prepare or update existing Spill Prevention, Countermeasure, and Control Plan (SPCC Plan) for proposed and/or expanded switching stations if necessary or required by EPA guidelines. The plans will include engineered and operational methods for preventing, containing, and controlling potential fluid releases, and provisions for quick and safe cleanup.
GP-7	Soil Management Plan. A Soil Management Plan will be developed and implemented for construction of the proposed Project. The objective of the Soil Management Plan is to provide guidance for the proper handling, onsite management, and disposal of impacted soil that might be encountered during construction activities. The plan will include practices that are consistent with California Title 8, Occupational Safety and Health Administration (Cal-OSHA) regulations, as well as appropriate remediation standards that are protective of the planned use. The Plan will provide guidelines for identification of impacted soil, assessing impacted soil, soil excavation, impacted soil storage, verification sampling, and impacted soil characterization and disposal. In the event that potentially contaminated soils are encountered within the footprint of construction, soils will be tested and stockpiled. The appropriate Certified Unified Program Agency (CUPA) will determine whether further assessment is warranted.
GP-8	Avian Protection Plan. An Avian Protection Plan (APP) shall be developed and implemented for the construction and operation of the Project. The APP will outline measures and protocols that will be undertaken to protect avian species and is intended to protect local and migratory bird species that may occur within the Project area.
Design	
GP-9	A "dulled" metal finish shall be used on new towers or rebuilt portions of existing towers to reduce visual impacts except where otherwise dictated by visual mitigation measures.
GP-10	Nonspecular conductors shall be used to reduce visual impacts.
GP-11	Project features will be placed so as to avoid sensitive features including, but not limited to, riparian areas, water courses, and cultural sites, and/or to allow conductors to clearly span the features, within limits of standard tower design. This will minimize the amount of sensitive features disturbed and/or reduce visual contrast.
GP-12	Drainage control features will be installed, as appropriate, to minimize the amount of stormwater flow from areas of active construction. Details would be described in the SWPPP.
Construction Vehicles/Equipment	
GP-13	Only clean-burning on-road and off-road diesel engines shall be used. Where feasible, heavy-duty diesel powered construction equipment manufactured after 1996 (with federally-mandated "clean" diesel engines) shall be used.
GP-14	Construction workers shall carpool to and from the construction site when possible.
GP-15	All trucks hauling soils or other loose materials shall be covered, or maintain at least two feet of freeboard (distance between the material and the top of the truck).
GP-16	Where visible soil material is carried onto adjacent public streets, the affected streets shall be cleaned daily with water sweepers.
GP-17	All vehicles and equipment operating within 100 feet of an active stream will be inspected daily to ensure they are free of any leaks of fuel, cooling, or lubricating fluids.
GP-18	All construction vehicles shall maintain a hazardous materials spill kit, which shall include absorbent materials, tarps, small storage containers or waterproof bags, and latex gloves. Field personnel shall be made aware of these kits and instructed on how to use them.
GP-19	Refueling, or addition or changing of oil and other fluids for equipment and heavy machinery shall be performed only at approved staging and construction yards. Staging and construction yards will be located on upland sites and spill containment measures will be used to minimize risk of spill or drainage into waterways. Oil and other fluids will be disposed of as required by California law. Emergency refueling, or emergency addition or changing of oil or other fluids shall not be performed within 500 feet of natural stream channels or wetlands.
GP-20	Helicopters utilized for construction will be refueled at helicopter staging areas or local airports. Procedures will include the use of drop cloths made of plastic and drip pans and trays to be placed under refilling areas to ensure that chemicals do not come into contact with the ground. Refueling areas will be located in designated areas where absorbent pads and trays are available.

GP-21	LADWP shall contact Angeles National Forest (ANF) dispatch seven days prior to helicopter use and shall provide ANF with radio frequencies being used by the aircraft, aircraft identifiers, the number of helicopters that will be used while working on National Forest System (NFS) lands at any given time, and the flight pattern of helicopters used on NFS lands. If a wildfire occurs in the Project area, upon contact from the Forest Aviation Officer, helicopters in use by LADWP shall immediately cease construction activities and not restart aerial operations until the Forest Aviation Officer provides clearance.
GP-22	The Applicant shall clear brush and dead and decaying vegetation that would pose a fire hazard from the work area prior to starting construction and/or maintenance work. The work area includes areas of construction (e.g., tower sites, switching station site) within the transmission ROW, construction laydown areas, pull sites, access roads, parking pads, and any other sites adjacent to the ROW where personnel are active or where equipment is in use or stored. Cleared vegetation shall either be removed or chipped and spread onsite in piles no higher than six inches. This will be determined in consultation with individual appropriate land management agencies.
Access Roads	
GP-23	The alignment of any new access roads or overland routes shall follow the designated area's landform contours where possible, providing that such alignment does not additionally impact resource values.
GP-24	To the extent practical, any re-grading of access roads shall be the minimum necessary to provide safe access of construction equipment, and erosion control measures.
GP-25	Construction vehicles shall use paved roads to access the construction site when available.
GP-26	The design and use of roadways or access trails within the ANF shall be coordinated with the District and Forest Supervisor's office. The ANF may specify conditions under which use of the Forest system roads and lands shall be permitted. These conditions may include restoring or blocking access at some service trails and repairing any roadway damage or erosion damage caused by construction activities or traffic. Any project-related damage to existing Forest system roads shall be repaired at LADWP's cost.
GP-27	Any construction or installation work requiring the crossing of a roadway or railway right-of-way would incorporate the use of guard poles, netting, or similar means to protect moving traffic and structures from the activity. If necessary on state highways, continuous traffic breaks would be planned and provided.
GP-28	To minimize traffic congestion and delays during construction to the extent feasible, LADWP shall restrict all necessary lane closures or obstructions on major roadways associated with Project construction activities to off-peak periods, as feasible. Lane closures should be avoided during the 6:00 a.m. to 9:00 a.m. timeframe and the 3:30 p.m. to 6:30 p.m. timeframe, or as otherwise defined within the TCPs.
GP-29	Where Project construction and/or maintenance access could close one or multiple lanes, and where significant degradations in roadway operations could result, roadway diversions should be provided to restore the travel lanes through temporary roadway restriping.
GP-30	Where Project construction and/or maintenance access could close bicycle lanes or trails, temporary diversions should be provided where feasible to provide continued access around the construction or maintenance area.
GP-31	Where Project construction and/or maintenance access could cut-off access to nearby recreation areas, and where no alternate route exists to the recreation areas, measures should be used to provide a minimum of one lane reversible access (with flagmen) through the construction/maintenance area, or work should only be conducted during off-peak hours or evening hours only.
GP-32	Any damage to local paved roadways caused by Project construction and/or maintenance should be repaired and the roadways should be restored to their previous condition.
GP-33	In areas where soils and vegetation are particularly sensitive to disturbance, existing access roads would be repaired only in areas where they are otherwise impassable or unsafe.
Construction Areas	
GP-34	Construction activities shall be limited to the designated right-of-way and approved access and work areas as identified in the ROD and POD. Any deviations from the approved areas must be cleared with the jurisdictional agency and/or landowner.
GP-35	Grading areas shall be clearly marked and no equipment or vehicles shall disturb slopes or drainages outside of the grading area.
GP-36	No paint or permanent discoloring agents will be applied to rocks or vegetation to indicate survey or construction activity limits.
GP-37	In construction areas (e.g., marshalling yards, tower sites, spur roads from existing access roads) where ground disturbance is significant or where recontouring is required, surface restoration shall occur as required by the landowner or land management agency. The method of restoration will normally consist of returning disturbed areas back to their natural contour, reseeding, installing cross drains for erosion control as necessary, placing water bars in the road as necessary, and filling ditches.

GP-38	Soil excavated from construction activities shall not be left at work areas where the slopes exceed 10 percent or where the work area is within 100 feet of a natural stream or waterbody (receiving water). In these situations, loose soil shall be used elsewhere within the immediate area or stockpiled at the staging area. Stockpiled soil shall be managed as required by the SWPPP. No stockpiling or spreading of soil or other materials shall occur within stream channels.
GP-39	During grading or excavation work for the Project, the contractor shall observe the exposed soil for visual evidence of contamination. If visual contamination indicators are observed during construction, the contractor shall stop work until the material is properly characterized and appropriate measures are taken to protect human health and the environment. The contractor shall document the exact location of the contamination and shall immediately notify a designated Environmental Monitor and propose actions for addressing the contamination in accordance with the Soil Management Plan.
GP-40	Existing watering facilities (e.g., tanks, developed springs, water lines, wells, etc.) will be repaired or replaced, if they are damaged or destroyed by construction activities, to their pre-disturbed condition as required by the landowner or land management agency.
GP-41	Allow natural vegetation to reoccur on temporarily disturbed areas following the completion of construction.
GP-42	Weed control measures on non-federal lands shall be implemented as determined in consultation with CDFG and the Counties of Los Angeles and Kern Agricultural Commissions.
GP-43	Every effort will be made to minimize vegetation removal and permanent loss at construction sites. Native vegetation will be flagged for protection or stockpiled for recontouring use at the discretion of the Biological Monitor and the Construction Supervisor.
GP-44	In construction areas where recontouring is not required, vegetation will be left in place wherever possible and the original contour will be maintained to avoid excessive root damage and allow for resprouting. Disturbance will be limited to overland driving where feasible to minimize changes in the original contours.
GP-45	Use of heavy equipment within a flowing channel will be avoided if possible; however, should it be necessary, the Environmental Monitor will be notified prior to initiation of construction activities to allow adequate time for site visits and surveys, if necessary.
GP-46	Asphalt or cement equipment will not be rinsed in, nor excess products deposited into any stream or other waterway. Asphalt or concrete effluent will not be allowed to enter into stream or RCA. Effluent will be removed from standing water and prevented from entering a waterway.
GP-47	Fill material, including brush, loose soils, and other similar debris will not be deposited within a stream channel or on a stream bank.
Surveys/Monitoring	
GP-48	Biological Monitor. For areas identified as environmentally sensitive, such as streams, wetlands, riparian areas, and other environmentally sensitive areas, a biological monitor shall be present during ground disturbing construction activities. The qualified biologist shall conduct monitoring for any area subject to disturbance from construction activities that may impact biological resources. The biological monitor's duties include minimizing impacts to special-status species, native vegetation, wildlife habitat, and unique resources, as well as to identify potential issues or impacts to biological resources and report those to the authorized biologist. Where appropriate, the monitor will flag the boundaries of biologically sensitive areas and monitor any construction activities in these areas to ensure that ground disturbance activities and impacts occur within designated limits.
GP-49	Worker Environmental Awareness Program. A Worker Environmental Awareness Program (WEAP) will be implemented to educate all construction personnel of the area's environmental conditions and the environmental protection measures that must be adhered to. An environmental training program will be established to communicate environmental concerns and appropriate work practices, including spill prevention, emergency response measures, protection of biological and cultural resources, and proper Best Management Practice (BMP) implementation, to all construction and maintenance personnel.
Coordination/Permits	
GP-50	Prior to construction, LADWP shall consult with all federal, state, and local agencies, including local agency consortiums, having jurisdiction over lands affected by the proposed Project's ROW and ancillary facilities to ensure that no permanent restrictions or preclusions of their land management practices occur.
GP-51	Construction activities shall be designed to minimize work on or use of local streets. In the event that local streets must be used for more than normal traffic purposes, an encroachment permit or similar authorization shall be obtained from the County (or other agency, as applicable). Any work requiring an encroachment permit shall include preparation of a traffic control plan or other management plan to minimize effects on local streets. Any damage to local streets will be repaired, and the street system will be restored.

GP-52	Consistent with Los Angeles County Code (Section 12.08.440), no construction activities shall occur in a residential area between 7:00 p.m. and 7:00 a.m. on weekdays and Saturdays, or at any time on Sundays or holidays. In the event that construction needs to occur outside the specified hours, a variance shall be obtained beforehand.
GP-53	Incorporate riparian area avoidance and permit measures. The following actions and all permit conditions detailed within the Nationwide 12 permit and RWQCB 401 water quality certification (subject to separate approval) would be implemented by the construction manager and environmental compliance monitor(s). Before construction, qualified resource specialists would stake and flag or fence exclusion zones around all identified riparian woodlands. Such exclusion zones would include a 10-foot buffer to preclude sediment intrusion into the riparian areas. Earth-moving activities would be restricted from these zones, although essential vehicle operation and foot travel would be permitted on existing roads, bridges, and crossings. All other construction activities, vehicle operation, material and equipment storage, and other surface-disturbing activities would be prohibited within the exclusion zone. In areas where riparian habitats are unavoidable, the construction manager in consultation with the lead environmental compliance inspector would narrow the width of the centerline to the maximum extent allowable. New spur roads and existing access road improvements would be constructed and implemented using methodology that preserves existing hydrology. Tower pad clearance would be minimized to the maximum extent allowable. All temporarily disturbed riparian areas that would not be utilized for future routine operation and maintenance activities would be restored to ensure no net loss of habitat functions and values. Following construction activities, the areas would be restored as soon as practicable.
GP-54	Construction crews will avoid impacting the streambeds and banks of any streams along the route to the extent feasible. When construction or maintenance work affects the bed, bank or margins of a stream under CDFG jurisdiction, LADWP will notify CDFG as required under Fish and Game Code Section 1602, which may include securing a Streambed Alteration Agreement.
GP-55	Local emergency service providers shall be coordinated with to ensure that construction activity and any associated lane closures or traffic impacts will not significantly affect emergency response vehicles.
GP-56	LADWP would obtain appropriate Tree Removal Permits when necessary from the appropriate government agencies. In accordance with the obtained permits, LADWP shall avoid or minimize impacts to protected trees.
GP-57	LADWP shall obtain permits/approvals from any affected railway operators to ensure construction activities comply with each company's safety requirements and to avoid disruption to or congestion of rail traffic.
GP-58	LADWP shall coordinate with the City of Santa Clarita at least 30 days prior to construction in the service territory to reduce the potential interruption of bus transit services.
GP-59	All residences adjacent to the project area shall be notified at least seven days in advance of local construction of the construction schedule and the type and expected duration of local impacts. The notice shall also include a phone number for construction noise questions.

TABLE 4. MITIGATION MEASURES

BIO-1	<i>Provide restoration/compensation for impacted sensitive vegetation communities.</i>
	<p>1a. The intent of this mitigation measure is to require LADWP to restore disturbed sites to pre-construction conditions or the desired future conditions per the Angeles National Forest (ANF) Land Management Plan (LMP). Before construction LADWP shall have a qualified biologist, where concurrence on the biologist has been provided by the USFS and BLM, document the community type and acreage of vegetation that would be subject to Project disturbance. Impacts to all oaks and native trees will be documented by identifying the species, number, location, and diameter at breast height (DBH). On non-federal lands, all protection and replacement measures shall be consistent with applicable local jurisdiction requirements, such as the Los Angeles County Oak Tree Ordinance. Tree removal shall not be permitted until replacement trees have been planted or transplanting sites are approved.</p> <ol style="list-style-type: none"> 1) For NFS and BLM lands, the USFS and BLM shall prepare a Habitat Restoration and Revegetation Plan, in discussion with LADWP, for the Project, which shall include plans for restoration, enhancement/revegetation and/or mitigation banking. For non-federal lands, LADWP shall prepare the Habitat Restoration and Revegetation Plan. Both plans shall include at minimum: (a) the location of the mitigation site (off-site mitigation may be required); (b) locations and details for topsoil storage; (c) the plant species to be used; (d) seed and cutting collecting guidelines; (d) a schematic depicting the mitigation area; (e) time of year that the planting will occur and the methodology of the planting; (f) a description of the irrigation methodology for container, bare-root or other planting needing irrigation; (g) measures to control exotic vegetation on site; (h) success criteria; (i) a detailed monitoring program; (j) locations and impacts to all oaks and native trees (over 3 inches DBH); (k) locations of temporary or permanent gates, barricades, law enforcement patrolling, or other means to control unauthorized vehicle access on access and spur roads as deemed necessary by the USFS and BLM (NFS and BLM lands only). 2) LADWP shall utilize a USFS/BLM approved locally collected seed mix, locally collected cuttings, bare-root stock, etc. to revegetate areas disturbed by construction activities. All habitats dominated by non-native species before Project disturbance shall be revegetated using appropriate native species. USFS/BLM approval is required for seeding on NFS/BLM land. The seed mix shall consist of native, locally occurring species collected from local seed sources. Cuttings and bare-root stock shall be of local origin. Restoration shall include the revegetation of stripped or exposed work sites and/or areas to be mitigated with vegetation native to the area. No commercially purchased seeds, stock, etc. will be accepted without the approval of the USFS and BLM on NFS/BLM lands, and seeds must be certified to be free of noxious weeds. Revegetation shall include ground cover, grass, shrub, and tree species to match disturbed areas to surrounding conditions and to restore or improve wildlife habitat quality to pre-Project or higher levels. The Habitat Restoration and Revegetation Plan shall also include a monitoring element. Post seeding and planting monitoring reporting will be yearly from years one to five and every other year from years six to ten or until the success criteria are met. LADWP shall restore temporarily disturbed areas, including existing tower locations that are to be removed by the Project, to pre-construction conditions or the desired future conditions per the ANF LMP. If the survival and cover requirements have not been met, LADWP is responsible for replacement planting to achieve these requirements. Replacement plants shall be monitored with the same survival and growth requirements as previously mentioned. 3) On NFS land, the USFS/LADWP will conduct a preconstruction evaluation of the probable impacts to all oaks and native trees in all construction-related disturbance areas. This evaluation shall be incorporated into the Habitat Restoration Plan and shall include the species and number of individuals, their DBH, location, and potential impact type. Construction within the driplines of all native trees and oak trees/shrubs, and incidental trimming or damage to trees along the proposed access/spur routes, shall not occur until the trees are evaluated by a USFS botanist or qualified arborist. This person shall identify appropriate measures to minimize tree loss, such as the placement of fence around the dripline, padding vehicles, minimizing soil removal or adding spoil around driplines, and the placement of matting under the existing dripline during construction activities. On the ANF, if a tree must have any construction-related activities such as equipment or soil staging within the drip zone, root pruning, or excessive branch pruning (greater than 25% in one year), then the tree must be monitored for five years for tree mortality. If any of these identified trees dies during the monitoring period, then the tree must be replaced at the rate appropriate to the DBH. 4) The replacement ratios (using rooted plants in liners or direct planting of acorns [for oaks]) for native trees or any oaks that are to be removed on the ANF shall be as follows: trees from 1 to 5 inches DBH shall be replaced at 3:1; trees from 5 to 12 inches shall be replaced at 5:1; trees from 12 to 24 inches shall be replaced at 10:1; trees from 24 to 36 inches shall be replaced at 15:1; and all oaks greater than 36 inches

	<p>shall be replanted at a ratio of 20:1. The replacement ratio for damaged trees shall be 2:1 for trees with DBH less than 12 inches and a 5:1 ratio for trees with DBH greater than 12 inches. The DBHs for scrub oaks will be measured following California Department of Fish and Game (CDFG) guidelines. On the ANF, any oak or native tree that must be removed or killed as a result of construction or other Project-related activities shall be replaced in kind or mitigated (off-site) at a comparable value. Compliance shall be evaluated annually for years one to five and bi-annually for years six to ten (years after tree planting). Trees shall be planted at locations acceptable to the landowner or managing agency. All planting locations, procedures, and results shall be evaluated by a qualified arborist and USFS botanist. On non-federal lands, all protection and replacement measures shall be consistent with applicable local jurisdiction requirements, such as the Los Angeles County Oak Tree Ordinance.</p> <p>5) Permanent impacts on federal lands shall be determined by the appropriate federal manager (USFS and BLM) at the ratios stated below (Table BIO-MM-1) or at a comparable value. On NFS and BLM lands, impacts will be considered permanent if the trees are not likely to recover by ten years post-disturbance. Where on-site restoration is planned for mitigation of temporary impacts to vegetation communities, LADWP shall identify a Habitat Restoration Specialist, where concurrence has been provided by the USFS, to implement the method of restoration outlined by the USFS/BLM in the Habitat Restoration Plan.</p> <p>6) On USFS/BLM lands, the creation or restoration of habitat shall be monitored after mitigation site construction to assess progress and identify potential problems with the restoration site. This will be monitored on USFS/BLM lands until the success criteria are met or annually for years one to five, and bi-annually for years six to ten. Remediation activities (e.g., additional planting, removal of non-native invasive species, or erosion control) shall be taken during the ten-year period if necessary to ensure the success of the restoration effort. If the mitigation fails to meet the established performance criteria after the ten-year maintenance and monitoring period, monitoring and remedial activities shall extend beyond the ten-year period until the criteria are met or unless otherwise specified by the USFS/BLM (as appropriate). If a fire occurs in a revegetation area within the ten-year monitoring period, LADWP shall be responsible for a one-time replacement. If a second fire occurs, no replanting is required, unless the fire is caused by LADWP activity. Off-site mitigation for NFS/BLM and non-NFS/BLM lands may be required if mitigation rates exceed what can be achieved on NFS/BLM land. This may be in the form of funding for land purchase for inclusion into the Angeles National Forest, mitigation banking, removing existing structures, or comparable restoration efforts.</p> <p>1b. During and after construction, USFS/BLM-identified potential or existing entrances to Project-related disturbed areas such as access/spur roads, pull sites, staging areas, fly yards, landing zones, etc. on NFS/BLM lands shall be gated, blockaded and/or concealed in some manner and maintained to prevent the unauthorized use by the general public. Signs prohibiting unauthorized use of these disturbance areas shall be posted on these barricades if deemed necessary by the USFS/BLM. If barricades are being compromised, law enforcement patrolling may also be implemented to control unauthorized access onto Project disturbance areas.</p> <p>1c. Treat cut tree stumps with Sporax. All stumps of trees (conifers and hardwoods) resulting from activities associated with construction of the Project shall be treated with Sporax according to product directions to prevent the spread of annosus root disease. Only licensed applicators shall apply Sporax. Sporax shall not be used during rain events unless otherwise approved by the USFS.</p>
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TABLE BIO-MM-1. SUMMARY OF ESTIMATED IMPACTS TO VEGETATION COMMUNITIES ON FEDERAL LANDS

Vegetation Communities	Jurisdiction	Permanent Impacts (acres)			Temporary Impact (acres)			Total Estimated Mitigation (acres)
		Estimated Impact	Ratio	Estimated Off-site Mitigation	Estimated Impact	Ratio	Estimated On-site Restoration	
Alternative 1								
Chamise Chaparral	USFS	16.73	3:1	50.19	56.06	1:1	56.06	106.25
Mojave Creosote Bush Scrub	BLM	2.68	1:1	2.68	21.81	1:1	21.81	24.49
Mojave Wash Scrub	BLM	0.25	1:1	0.25	2.05	1:1	2.05	2.30
Riversidian Sage Scrub	USFS	3.06	5:1	15.3	10.48	2:1	20.96	36.26
Southern Coast Live Oak Riparian Forest	USFS	0.05	5:1	0.25	0.38	2:1	0.76	1.01
Southern Cottonwood Willow Riparian Forest	USFS	0.42	5:1	2.1	0.86	2:1	1.72	3.82
Southern Mixed Chaparral	USFS	14.13	3:1	42.39	45.81	1:1	45.81	88.20

Vegetation Communities	Jurisdiction	Permanent Impacts (acres)			Temporary Impact (acres)			Total Estimated Mitigation (acres)
		Estimated Impact	Ratio	Estimated Off-site Mitigation	Estimated Impact	Ratio	Estimated On-site Restoration	
Southern Sycamore Alder Riparian Woodland	USFS	0.13	5:1	0.65	0.25	2:1	0.5	1.15
Southern Willow Scrub	USFS	0.32	3:1	0.96	1.30	2:1	2.6	3.56
Alternative 2								
Chamise Chaparral	USFS	10.11	3:1	30.33	39.38	1:1	39.38	69.71
Disturbed/developed	USFS	7.8	1:1	7.8	24.8	1:1	24.8	32.6
Mojave Creosote Bush Scrub	BLM	2.69	1:1	2.69	21.82	1:1	21.82	24.51
Mojave Wash Scrub	BLM	0.25	1:1	0.25	2.06	1:1	2.06	2.31
Riversidian Sage Scrub	USFS	1.84	5:1	9.2	8.85	2:1	17.7	26.9
Southern Coast Live Oak Riparian Forest	USFS	0.69	5:1	3.45	3.39	2:1	6.78	10.23
Southern Mixed Chaparral	USFS	3.24	3:1	9.72	8.77	1:1	8.77	18.49
Southern Riparian Scrub	USFS	0.33	3:1	0.99	0.66	1:1	0.66	1.65
Southern Sycamore Alder Riparian Woodland	USFS	0.87	5:1	4.35	2.2	2:1	4.4	8.75
Alternative 2a								
Chamise Chaparral	USFS	10.11	3:1	30.33	39.38	1:1	39.38	69.71
Disturbed/developed	USFS	3.24	1:1	3.24	12.72	1:1	12.72	15.96
Interior Live Oak Chaparral	USFS	2.06	5:1	10.3	5.60	2:1	11.2	21.5
Mojave Creosote Bush Scrub	BLM	2.68	1:1	2.68	21.81	1:1	21.81	24.49
Mojave Wash Scrub	BLM	0.25	1:1	0.25	2.05	1:1	2.05	2.3
Riversidian Sage Scrub	USFS	1.84	5:1	9.2	8.85	2:1	17.7	26.9
Scrub Oak Chaparral	USFS	1.46	5:1	7.3	3.19	2:1	6.38	13.68
Southern Coast Live Oak Riparian Forest	USFS	0.69	5:1	3.45	3.40	2:1	6.8	10.25
Southern Mixed Chaparral	USFS	9.03	3:1	27.09	27.88	1:1	27.88	54.97
Southern Riparian Scrub	USFS	0.33	5:1	1.65	0.66	2:1	1.32	2.97
Southern Sycamore Alder Riparian Woodland	USFS	0.81	5:1	4.05	1.64	2:1	3.28	7.33
Alternative 3								
Chamise Chaparral	BLM	0.00	1:1	0.0	0.02	1:1	0.02	0.02
Disturbed/developed	USFS	1.04	1:1	1.04	2.13	1:1	2.13	3.17
Mojave Creosote Bush Scrub	BLM	2.68	1:1	2.68	21.81	1:1	21.81	24.49
Mojave Wash Scrub	BLM	0.25	1:1	0.25	2.05	1:1	2.05	2.3
Riversidian Sage Scrub	USFS	9.57	5:1	47.85	28.19	2:1	56.38	104.23
Scrub Oak Chaparral	USFS	2.87	5:1	14.35	5.83	2:1	11.66	26.01
Southern Riparian Scrub	USFS	0.34	5:1	1.7	0.69	2:1	1.38	3.08
New Circuit								
Chamise Chaparral	USFS	8.03	3:1	24.09	23.05	1:1	23.05	47.14
Riversidian Sage Scrub	BLM	0.04	1:1	0.04	0.34	1:1	0.34	0.38
Riversidian Sage Scrub	USFS	1.98	5:1	9.9	5.96	2:1	11.92	21.82
Southern Coast Live Oak Riparian Forest	USFS	0.08	5:1	0.4	0.66	2:1	1.32	1.72
Southern Cottonwood Willow Riparian Forest	USFS	0.40	5:1	2.0	0.80	2:1	1.6	3.6
Southern Sycamore Alder Riparian Woodland	USFS	0.09	5:1	0.45	0.19	2:1	0.38	0.83
Reconductoring								
Chamise Chaparral (Segment ABG)	USFS	16.07	3:1	48.21	32.65	1:1	32.65	80.86
Disturbed/developed (Segment ABG)	USFS	7.77	1:1	7.77	25.28	1:1	25.28	33.05
Mojave Creosote Bush Scrub (Segment ABG)	BLM	2.85	1:1	2.85	23.16	1:1	23.16	26.01
Mojave Wash Scrub	BLM	0.23	1:1	0.23	1.86	1:1	1.86	2.09

Vegetation Communities	Jurisdiction	Permanent Impacts (acres)			Temporary Impact (acres)			Total Estimated Mitigation (acres)
		Estimated Impact	Ratio	Estimated Off-site Mitigation	Estimated Impact	Ratio	Estimated On-site Restoration	
(Segment ABG)								
Riversidian Sage Scrub (Segment ABG)	USFS	5.07	5:1	25.35	10.30	2:1	20.6	45.95
Southern Coast Live Oak Riparian Forest (Segment ABG)	USFS	3.25	5:1	16.25	6.60	2:1	13.2	29.45
Southern Mixed Chaparral (Segment ABG)	USFS	2.86	3:1	8.58	8.01	1:1	8.01	16.59
Southern Riparian Scrub (Segment ABG)	USFS	0.33	5:1	1.65	0.66	2:1	1.32	2.97
Southern Sycamore Alder Riparian Woodland (Segment ABG)	USFS	0.95	5:1	4.75	2.34	2:1	4.68	9.43
Southern Coast Live Oak Riparian Forest (Segment K)	BLM	0.02	1:1	0.02	0.04	1:1	0.04	0.06
Southern Mixed Chaparral (Segment K)	BLM	0.00	1:1	0.0	0.01	1:1	0.01	0.01

Note: The permanent and temporary impact calculations provided above are estimates based on the impact model described in Appendix C of the Biological Resources Technical Report. Therefore, acreage numbers for the habitat types listed above may be smaller than those listed in the table. Preconstruction surveys will be conducted to estimate the acreage impacts and will be based on the final design not the impact model.

BIO-2	<p><i>The following prescriptions would prevent the spread of invasive weeds into previously uninfested areas in the designated construction right-of-way.</i></p> <p>2a Prepare and implement a Weed Control Plan. LADWP/ANF/BLM shall prepare and implement a comprehensive, adaptive Weed Control Plan on NFS/BLM lands for pre-construction and construction invasive weed abatement. The long-term Weed Control Plan, including monitoring and eradication, will be defined as part of the 50 year Operations and Maintenance Permit. On the ROW easement lands administered by the USFS/BLM, the Weed Control Plan shall incorporate all appropriate and legal agency-stipulated regulations. The Weed Control Plan shall be submitted to the USFS/BLM for final authorization of weed control methods, practices, and timing before implementation of the Weed Control Plan on public lands. Weed control on BLM lands using pesticides will require an approved BLM Pesticide Use Permit. Pesticide Use Permits are issued for a maximum of three years. ROW easements located on private lands shall include adaptive provisions such as wheel and equipment washing for the implementation of the Weed Control Plan. The Weed Control Plan shall include the following:</p> <ol style="list-style-type: none"> 1) A pre-construction weed inventory shall be conducted on NFS and BLM lands by surveying all areas subject to ground-disturbing activity, including, but not limited to, tower pad preparation and construction areas, tower removal sites, pulling and tensioning sites, assembly yards, and areas subject to grading for new or improved access and spur roads. Weed populations that: (1) are rated High or Moderate for negative ecological impact in the California Invasive Plant Inventory Database (Cal-IPC 2006); (2) aid and promote the spread of wildfires (such as cheatgrass, Saharan mustard, and medusa head); and (3) are considered by the USFS and/or BLM as species of priority (for NFS/BLM lands only) shall be mapped and described according to density and area covered. In areas subject to ground disturbance, weed infestations shall be treated before construction according to control methods and practices for invasive weed populations designed in consultation with the USFS/BLM. The Weed Control Plan shall be updated and utilized for eradication and monitoring post-construction. 2) Weed control treatments shall include all legally permitted herbicide, manual, and mechanical methods applied with the authorization of the USFS/BLM. The application of herbicides shall be in compliance with all State and federal laws and regulations under the prescription of a Pest Control Advisor (PCA), where concurrence has been provided by the USFS/BLM, and implemented by a Licensed Qualified Applicator, if the herbicide is in the restricted use category. The most effective herbicides with the least toxic surfactant available shall be used. Herbicides shall not be applied during or within 24 hours of a 70% chance of occurring rain event. Herbicides shall not be used within Riparian Conservation Areas (RCAs) on the ANF without approval of the USFS. In riparian areas, only water-safe herbicides, surfactants and adjuvants shall be used. Herbicides shall not be applied by spray equipment when wind
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velocities exceed 6 mph. Herbicides applied by sponge or paintbrush to cut stumps shall not be applied at over 15 mph. In areas containing special-status plants or animals, there will be a 5- to 70-foot buffer where herbicides are not used. The size of the buffer will be determined and flagged for avoidance by an approved botanist/biologist, based on phenology or life cycle at time of treatment, rareness and imperilment of species, vulnerability of herbicide being used, concentration of herbicide used based on no observed effect concentrations and/or environmental conditions and terrain. Where manual and/or mechanical methods are used, disposal of the plant debris will follow the regulations set by the USFS/BLM. The timing of the weed control treatment shall be determined for each plant species in consultation with the USFS/BLM (on NFS/BLM lands) with the goal of controlling populations before they start producing seeds. Pre-emergent herbicides will only be used in areas that have a very low potential for supporting native plant species after disturbance, as determined by an agency botanist.

For the preconstruction and construction of the Project, measures to control the introduction and spread of noxious weeds in the Project work area shall be taken as follows.

- 3) On the ANF and BLM lands, surveying for new invasive weed populations and the monitoring of identified and treated populations shall be required at all sites impacted by construction (tower pads, staging areas, landing zones, etc.), including access/spur roads disturbed during the Project. Surveying and monitoring for weed infestations shall occur annually for years one to five and bi-annually for years six to ten, or until success criteria are met. Treatment of all identified weed populations shall occur at an appropriate interval so as to meet the success criteria. When no new seedlings or resprouts are observed at treated sites for three consecutive, normal rainfall years, the weed population can be considered eradicated and weed control efforts may cease for that impact site.
- 4) During Project preconstruction and construction, all seeds and straw materials shall be weed-free rice straw, and all gravel and fill material shall be certified weed-free by the county Agriculture Commissioners' Offices. Any deviation from this must be approved by a USFS/BLM botanist. All plant materials used during restoration shall be native, certified weed-free, and approved by the USFS/BLM.
- 5) Before beginning preconstruction activities, the USFS, in coordination with LADWP, will determine suitable locations to install field washing stations as part of the Weed Control Plan. Before commencing construction activities, LADWP shall document that all vehicles, equipment, and tools used on the Project have been cleaned at existing construction yards or legally operating car washes. This is a one-time requirement designed to address the potential of new species of weeds being transported from outside the area. If, however, vehicles, equipment, or tools are used or driven off paved roads on non-NFS lands, washing must occur before entering USFS lands.

During Project preconstruction and construction, all vehicles, equipment, or tools which will be used outside of permitted Project roadways shall be washed at the nearest station before operating off-road. In other areas also designated by the USFS, vehicles, equipment, and tools will be washed at the nearest station after exiting those areas. Vehicles that do not leave permitted Project roadways are not required to be washed after the initial washing described above. All washing shall take place where rinse water is collected and disposed of in either a sanitary sewer or landfill, unless otherwise approved by the USFS.

Written daily logs shall be kept for all vehicle/equipment/tool washing that states the date, time, location, type of equipment washed, methods used, and staff present. The log shall include the signature of a responsible staff member. Logs shall be available to the USFS for inspection at any time and shall be submitted to the USFS permit administrator on a monthly basis.

- 6) During Project operation and maintenance activities, weeds shall be cleared and disposed of in assembly yards, helicopter landing areas, tower pads, spur roads, staging areas, and any other disturbance areas in a USFS/BLM-approved method.

- 2b Remove weed seed sources from construction access routes.** Before construction, LADWP shall initiate invasive species eradication. Populations to be treated will be small to moderate and isolated, but have the potential to spread aggressively during construction. Post-construction, these isolated populations will be included and treated according to the restoration plan. Per the Forest Service Manual (FSM) 2080 Best Management Practice (BMP) guideline, LADWP shall also remove or reduce sources of weed seed along the travel routes associated with Project construction. Weed species identified along the Alternatives and associated access roads include tocalote, artichoke thistle, tree tobacco, saltcedar, slender wild oat/wild oat, ripgut brome, soft chess brome, red brome, cheatgrass, blessed thistle, filaree, shortpod mustard, prickly lettuce, common horehound, yellow sweetclover, rabbit foot grass, Mediterranean grass, sowthistle, rat-tail fescue, tree-

	<p>of-heaven, giant reed grass, yellow starthistle, bull thistle, fennel, perennial pepperweed, and black locust. To prevent the introduction or control the spread of noxious weeds, hand removal or other control methods will be implemented to reduce seed production during Project construction. Following Project approval and during the time of year when weed species can be observed and identified, LADWP shall identify, using a qualified plant ecologist, any other weed seed sources that could contribute to Project-related weed spread on the ANF and BLM lands. Target infestations identified by Project surveys should be controlled before construction. LADWP shall initiate eradication of the target infestations discovered during pre-construction surveys along construction routes.</p> <p>2c Remove weed seed sources from assembly yards, staging areas, tower pads, pull sites, landing zones, and spur roads. Before construction and during each year of use for construction at all assembly yards, staging areas, tower pads, pull sites, landing zones, and spur roads within the ANF and BLM lands, weed-infested areas should be hand-weeded and/or treated as appropriate for the individual weed species under the guidance of a qualified plant ecologist or restoration ecologist, where concurrence on the ecologist has been provided by the USFS/BLM. Unless otherwise authorized by the USFS/BLM, weed control efforts in these areas shall be timed annually to reduce shorthorn mustard, tocalote, bromes and other noxious weed seed production, by hand-removing or weed-whacking infestations when flowering has just started, but before seeds have been produced. All plant debris shall be disposed of at a USFS/BLM approved location. Weed control efforts shall commence in early spring (February – March), as indicated annually by a qualified plant ecologist or restoration ecologist in coordination with LADWP and USFS/BLM botanist or weed specialist.</p> <p>2d Use of Herbicides to Control Exotic Weeds. LADWP may use herbicides where deemed necessary for the control of exotic weeds within the Project area. Weed control should be species-specific, and herbicides should be applied only if necessary after considering alternate methods or as part of a proven eradication strategy for that weed species. To minimize potential impacts, weed control treatments shall include all legally permitted herbicide, manual, and mechanical methods applied with the authorization of the USFS. Due to typically large seed banks and the ability of some weed species to vigorously resprout following removal methods, most species require more than one round of treatment, or require a different follow-up treatment method after the initial removal occurs. Any herbicide use on NFS lands would be subject to the review and approval of the appropriate USFS personnel and in coordination with LADWP.</p>
BIO-3	<p><i>Incorporate riparian area avoidance and permit measures.</i></p> <p>The following actions and all permit conditions detailed within the Nationwide 12 permit and RWQCB 401 water quality certification (subject to separate approval) would be implemented by the construction manager and environmental compliance monitor(s).</p> <p>3a LADWP shall not construct or modify any structure, culvert, or bridge or modify any habitat on NFS lands in RCAs without the authorization of the USFS. Vegetation removal or road construction shall not occur in RCAs during the breeding season for nesting birds (February 1 to August 15) unless otherwise approved by the USFS. LADWP shall prepare and implement a USFS RCA Treatment Plan for the Project. This Plan shall include the specific activities that will occur at each of the RCA points crossed by the Project, including the amount and type of vegetation to be cleared, the type of road crossing or improvement allowed for wet and dry crossings, and the methods that would be employed to reduce the effects of the Project on water quality. The Plan shall include seasonal restrictions for vehicle or equipment passage, restrictions on what activities may occur (such as grading, vegetation removal or tree trimming), monitoring requirements, and restoration requirements. This Plan shall be submitted to the USFS for approval before construction or the grading of any access road.</p> <p>3b Before construction, qualified resource specialists shall stake and flag or fence exclusion zones around all identified riparian areas. Such exclusion zones will include a 10-foot buffer to preclude sediment intrusion into the riparian areas. Earth-moving activities shall be restricted from these zones, although essential vehicle operation and foot travel will be permitted on existing roads, bridges, and crossings. All other construction activities, vehicle operation, material and equipment storage, and other surface-disturbing activities will be prohibited within the exclusion zone.</p> <p>3c In areas where riparian habitats are unavoidable, the construction manager, in consultation with the lead environmental compliance inspector and USFS, shall narrow the width of the road through the area to the minimum extent required for safe travel. New spur roads and existing access road improvements shall be constructed and implemented using methodology that preserves existing hydrology.</p> <p>3d Towers shall not be constructed in riparian areas.</p> <p>3e All temporarily disturbed riparian areas that would not be utilized for future routine operation and maintenance activities shall be restored according to the guidelines of the Habitat Restoration Plan to the extent required to</p>

	<p>ensure no net loss of habitat functions and values. Following construction activities, the areas will be restored as soon as practicable.</p> <p>3f Permanent, unavoidable losses of riparian areas will be mitigated by restoration and/or preservation of off-site habitats, as outlined in the Habitat Restoration Plan. The final mitigation and off-site restoration locations will be determined in consultation with LADWP and the responsible agency(s). Mitigation acreage ratios will be consistent with those listed in Table BIO-MM-1.</p>
BIO-4	<p><i>Provide restoration/compensation for affected jurisdictional areas.</i></p> <p>4a Impacts to areas under jurisdiction of the USACE, RWQCB, USFS and CDFG shall be avoided to the extent feasible. Where avoidance of jurisdictional areas is not feasible, including emergency repairs, and access/spur roads within RCAs, the applicant shall provide the necessary mitigation required as part of wetland permitting. This will include creation, restoration, and/or preservation of suitable jurisdictional habitat along with adequate buffers to protect the function and values of jurisdictional area mitigation. The location(s) of the mitigation will be determined in consultation with LADWP and the responsible agency(s) as part of the wetland permitting process.</p> <p>4b Measures 3a, b, c, and d will also be incorporated to avoid and protect jurisdictional areas.</p>
BIO-5	<p><i>Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife.</i></p> <p>5a. Conduct preconstruction surveys in locations where potential habitat exists for special-status species. If sign or habitat is detected during the surveys, construction activities will be monitored by biologists, or exclusion fencing will be placed around work areas. If individuals are found within the area of potential effect, they will be relocated to areas (as authorized by the Biological Opinion for federally listed species) that are not potentially impacted by the Project.</p> <p>5b. Cover all steep-walled trenches or excavations used during construction to prevent entrapment of wildlife (e.g., reptiles and small mammals). If the trenches or excavations cannot be covered, a ramp that will sufficiently allow wildlife to escape shall be placed into the trench or excavated area, or exclusion fencing (i.e., silt fencing) shall be installed around the trench or excavation to prevent entrapment of wildlife. Open trenches, or other excavations that could entrap wildlife, shall be inspected by the qualified biologists a minimum of three times per day and immediately before backfilling. Furthermore, employees and contractors shall look under vehicles and equipment for the presence of wildlife before moving the vehicle or equipment. If wildlife is observed, no vehicles or equipment would be moved until the animal has left voluntarily or is removed by the qualified biologist. Should a dead or injured special-status species be found in a trench or excavation or anywhere in the construction zone or along an access road, the qualified biologist shall contact BLM and/or USFS (for activities on land managed by the agencies) and the Wildlife Agencies within 48 hours of the finding. The qualified biologist shall report the species found, the location of the finding, and the cause of death (if known), and shall submit a photograph and any other pertinent information.</p>
BIO-6	<p><i>Implement a Worker Environmental Awareness Program.</i></p> <p>A qualified biologist(s) shall conduct a detailed biological Worker Environmental Awareness Program (WEAP) for all Project personnel before any construction or activities within the Project footprint. The WEAP shall include discussions of Project permits and brief summaries of their conditions; discussions of agency involvement, their applicable sensitivity measures, and relevant environmental protection legislation (e.g., the Endangered Species Act, the Migratory Bird Treaty Act); descriptions of special-status species and other sensitive resources that could exist in the Project area, along with their locations, legal status and protections; and a review of all measures to be implemented for avoidance of these sensitive resources. The final list of wildlife species to be included in the WEAP may be reduced at the discretion of the biologist with concurrence from applicable agencies. BIO-7 is in addition to LADWP's General Practice (GP) 69 WEAP, which does not provide the level of biological detail this mitigation measure provides.</p> <p>6a. Training materials and briefings shall also include the consequences of non-compliance with these acts; identification and values of plant and wildlife species and significant natural plant community habitats; fire protection measures; sensitivities of working on NFS lands and identification of USFS sensitive species; hazardous substance spill prevention and containment measures; a contact person in the event of the discovery of dead or injured wildlife; and review of mitigation requirements. Discussion of GPs and BMPs shall include topics such as appropriate work limits, avoiding the spread of non-native plant species, fire safety, wildlife avoidance, trash and debris collection, spill prevention and containment protocol, and appropriate protocol for passage and/or construction near riparian zones. Sightings of sensitive wildlife species or harmful encounters with any wildlife species shall be reported to the Project biologist immediately for evaluation and, as necessary, reporting to agencies.</p> <p>6b. The WEAP shall also include the protocol to be followed when road kill is encountered in the work area or</p>

	<p>along access roads to minimize potential for additional mortality of scavengers, including listed species such as the California condor. On NFS/BLM lands, road kill shall be reported to the USFS/BLM or other applicable agency within 24 hours. On non-NFS lands, road kill shall be reported to the appropriate local animal control agency within 24 hours. Training materials and a course outline shall be provided to the USFS/BLM for review and approval at least 30 days before the start of construction. Maps showing the location of special-status wildlife, fish, or populations of rare plants, exclusion areas, or other construction limitations (e.g., limited operating periods) will be provided to the environmental monitors and construction crews before ground disturbance.</p> <p>6c. The training shall be conducted for all crew members present for the start of construction. If new crew members are brought to the Project after this time, they shall take part in the WEAP before beginning construction work; if the biologist is not available at this time, new crew members shall be given a summary handout of the WEAP until the full WEAP can be administered by the Project biologist, to be conducted no more than one workweek following the crew members' assignment to the Project. All crew members who have completed the WEAP shall submit their names to a list to be updated continuously and furnished to agencies upon request. No construction worker may work in the field for more than five days without participating in the WEAP.</p>
BIO-7	<p><i>Impacts to Raptors.</i></p> <p>7a. If Project construction activities cannot occur completely outside the bird breeding season, then pre-construction surveys for active nests shall be conducted by a qualified biologist within 1,200 feet of the construction zone no more than seven days before the initiation of construction that would occur between February 1 and August 15. The required survey dates may be modified based on local conditions (e.g., high altitude locations) with the approval of the CDFG, BLM, and/or USFS. LADWP shall be responsible for designating qualified biologists who can conduct pre-construction surveys and monitoring for breeding birds. The résumé of the proposed biologists will be provided to the BLM and USFS for concurrence before ground disturbance. If breeding birds with active nests are found, a biological monitor shall establish a species-specific buffer around the nest for ground-based construction activities and a one-mile buffer for helicopter use if helicopters are flying below 300 feet, and no activities will be allowed within the buffer(s) until the young have fledged from the nest or the nest fails. If nesting bald or golden eagles are identified, a 660-foot no activity buffer will be implemented. The buffer (660-foot eagle and one-mile helicopter) may be adjusted to reflect existing conditions, including ambient noise, topography, and disturbance, with the approval of the U.S. Fish and Wildlife Service (USFWS), CDFG, BLM or USFS, as appropriate (USFS 2005). On NFS lands, the USFS shall apply the USFS Land Management Plan Standard S18 (Part 3 of the Land Management Plan), which states, "Protect known active and inactive raptor nest areas. Extent of protection will be based on proposed management activities, human activities existing at the onset of nesting initiation, species, topography, vegetative cover, and other factors. When appropriate, a no-disturbance buffer around active nest sites will be required from nest-site selection to fledging." If for any reason a bird nest must be removed during the nesting season, LADWP shall provide written documentation providing concurrence from the USFWS and CDFG authorizing the nest relocation. On NFS lands, this will include coordination and written approval from the USFS. On BLM lands, this will include coordination and written approval by the BLM. LADWP shall provide a written report documenting the relocation efforts. The report shall include what actions were taken to avoid moving the nest, the location of the nest, what species is being relocated, the number and condition of the eggs taken from the nest, the location of where the eggs are incubated, the survival rate, the location of the nests where the chicks are relocated, and whether the birds were accepted by the adopted parent.</p> <p>7b. Before construction, LADWP shall identify all existing raptor nests that would be affected by Project construction. LADWP shall coordinate with the USFWS, CDFG, USFS and BLM for the proposed removal of nests that may present safety issues associated with the construction activities. All nest removals shall occur after the nest is demonstrated to be inactive by a qualified biologist and have been shown to not result in take as defined by the Migratory Bird Treaty Act (MBTA).</p>
BIO-8	<p><i>Avoid nesting season and limit disturbance of nesting birds.</i></p> <p>LADWP shall conduct pre-construction surveys for nesting birds if construction and removal activities are scheduled to occur during the breeding season. Surveys shall be conducted in areas within 500 feet of tower sites, laydown/staging areas, substation sites, access/spur road locations, or any other area subject to ground disturbance. Surveys for birds shall be conducted for all areas from February 1 to August 15. The required survey dates may be modified based on local conditions (e.g., high altitude locations) with the approval of the CDFG and/or USFS. LADWP shall be responsible for designating qualified biologists who can conduct pre-construction</p>

	<p>surveys and monitoring for breeding birds. The résumé of the proposed biologists will be provided to the USFS for concurrence before ground disturbance.</p> <p>If breeding birds with active nests are found, a biological monitor shall establish a 300-foot buffer around the nest for ground-based construction activities and a one-mile buffer for helicopter use if helicopters are flying below 300 feet, and no activities will be allowed within the buffer(s) until the young have fledged from the nest or the nest fails. If nesting bald or golden eagles are identified, a 660-foot no activity buffer will be implemented. The 300-foot (or 660-foot eagle and one-mile helicopter) buffer may be adjusted to reflect existing conditions, including ambient noise, topography, and disturbance with the approval of the USFWS, CDFG, or USFS, as appropriate and in coordination with LADWP. On NFS lands, the USFS shall have the authority to define/redefine such buffers. The biological monitors shall conduct regular monitoring of the nest to determine success/failure and to ensure that Project activities are not conducted within the buffer(s) until the nesting cycle is complete or the nest fails.</p> <p>The biological monitors shall be responsible for documenting the results of the surveys and the ongoing monitoring and will provide a copy of the monitoring reports for impact areas to the respective agencies (e.g., on NFS lands documentation will be provided to the Forest Biologist). If for any reason a bird nest must be removed during the nesting season, LADWP shall provide written documentation providing concurrence from the USFWS and CDFG authorizing the nest relocation. On NFS lands, this will include coordination and written approval from the USFS. LADWP shall provide a written report documenting the relocation efforts. The report shall include what actions were taken to avoid moving the nest, the location of the nest, what species is being relocated, the number and condition of the eggs taken from the nest, the location of where the eggs are incubated, the survival rate, the location of the nests where the chicks are relocated, and whether the birds were accepted by the adopted parent.</p>
BIO-9	<i>No mitigation measures required for Impact BIO-9.</i>
BIO-10	<i>No mitigation measures required for Impact BIO-10.</i>
BIO-11	<p><i>Reduce avian electrocutions/collisions on transmission lines.</i></p> <p>Raptor safety protection will be required on tower/conductor (lines) in appropriate locations. The Project would have minimum clearance between phase conductors or between phase conductors and grounded hardware, as recommended by the Avian Power Line Interactive Committee (APLIC 2006), that are sufficient to protect even the largest birds, such as California condor, and therefore would present little to no risk of bird electrocution.</p> <p>New Project structures shall be designed to implement collision-reducing techniques as described in the latest version of the APLIC guidelines. Devices such as swan wrapping or other similar functioning devices may be required if areas are identified as being a hazard to birds. In addition, per General Practice (GP) 8, an Avian Protection Plan will be developed for this Project that will include avian collision protocols.</p>
BIO-12	<i>No mitigation measures required for Impact BIO-12.</i>
BIO-13	<p><i>Protect special-status plant species and their habitat.</i></p> <p>13a. Conduct preconstruction surveys for State and federal Threatened, Endangered, Proposed, Petitioned, Candidate, USFS Sensitive, USFS Watch, BLM Sensitive, and California Native Plant Society (CNPS) listed plants and avoid any occurrences of these plants. LADWP shall conduct pre-construction surveys for State and federally listed Threatened and Endangered, Proposed, Petitioned, and Candidate plants in a 250-foot radius around all areas subject to ground-disturbing activity, including, but not limited to, tower pad preparation and construction areas, tower removal sites, pulling and tensioning sites, assembly yards, and areas subject to grading for new access roads. The surveys shall be conducted during the appropriate blooming period(s) by a qualified plant ecologist/biologist according to protocols established by the USFWS, CDFG, USFS, BLM, and CNPS. The résumé of the proposed biologists will be provided to the USFS and BLM for concurrence before ground disturbance. The completion of these surveys shall be coordinated with the federal land manager. All listed plant species found shall be marked and avoided. If a federally listed plant species cannot be avoided on private land, consultation with USFWS will occur.</p> <p>13b. Before site grading, any populations of listed plant species identified during the surveys shall be protected by a buffer zone. The buffer zone shall be established around these areas and shall be of sufficient size to eliminate potential disturbance to the plants from human activity and any other potential sources of disturbance, including human trampling, erosion, and dust. The size of the buffer will depend upon the proposed use of the immediately adjacent lands, and include consideration of the plant's ecological requirements (e.g., sunlight, moisture, shade tolerance, edaphic physical and chemical characteristics) that are identified by a qualified plant ecologist and/or Forest botanist. At minimum, the buffer shrub species</p>

	<p>shall be equal to twice the drip line (i.e., two times the distance from the trunk to the canopy edge) to protect and preserve the root systems of the plant. The buffer for herbaceous species shall be, at minimum, 50 feet from the perimeter of the population or the individual. A smaller buffer may be established, provided there are adequate measures in place to avoid the take of the species, with the approval of the USFWS, CDFG, USFS, and BLM and in coordination with LADWP. If impacts to listed plants are determined to be unavoidable, the USFWS shall be consulted for authorization, through the context of a Biological Opinion. Additional mitigation measures to protect or restore listed plant species or their habitat may be required by the USFWS before impacts are authorized, whichever is appropriate.</p> <p>13c. Impacts to non-listed plant species (i.e., USFS Sensitive, CNPS List 1,2 and 4 species) shall first be avoided where feasible, and, where not feasible, impacts shall be compensated through reseedling (with locally collected seed stock), or other USFS or BLM approved methods. For USFS lands, if the ANF determines Project activities will result in the loss of a significant portion of the known individuals of USFS Sensitive plant species, and reseedling/transplanting are not feasible options, LADWP shall preserve existing off-site occupied habitat that is not already part of the public lands in perpetuity at a 2:1 mitigation ratio (habitat preserved: habitat impacted). This ratio will apply only to specific acreage inhabited by special-status plant species that are removed during construction, and will supersede ratios listed in Table BIO-MM-1 regardless of habitat type. The determination of a significant rare plant population loss will be decided by the ANF botanist on a species and location basis, after available literature, research, and overall species distribution are reviewed. If avoidance, reseedling/transplanting, and, preservation of off-site habitat occupied by the impacted species are not found to be possible, the ANF will consider off-site restoration of degraded ANF lands and/or preservation of non-public lands with suitable habitat for the impacted species. The preserved habitat shall be of superior or similar habitat quality to the impacted areas in terms of soil features, extent of disturbance, habitat structure, and dominant species composition, as determined by a qualified plant ecologist.</p> <p>13d. All special-status plant species impacted by Project activities shall be documented in an annual report and submitted to the federal land manager (USFS and BLM) until the success criteria outlined in the Habitat Restoration Plan are met. Where reseedling has occurred, LADWP shall track the success of the plants during the course of the annual restoration monitoring. This information shall be submitted as part of the annual report to the federal land manager (USFS and BLM).</p>
BIO-14	<p><i>Protect western yellow-billed cuckoo, southwestern willow flycatcher, least Bell's vireo, and their habitat.</i></p> <p>14a. All Project activities taking place within suitable habitat for the western yellow-billed cuckoo, southwestern willow flycatcher, and least Bell's vireo shall be conducted from November through early March, which is a period outside their breeding seasons (Sedgwick 2000, Sogge 2000, Brown 1993, Kus 2002, Hughes 1999). If these activities cannot be avoided during the breeding season, the following measures shall apply:</p> <p>14b. If construction activities must occur during the breeding season in areas that have the potential to support listed riparian species, a qualified ornithologist shall conduct protocol surveys of the Project and adjacent areas within 500 feet to determine if this species is present within the area and to determine breeding status. USFWS protocol surveys will be conducted for southwestern willow flycatcher, least Bell's vireo, and western yellow-billed cuckoo (if no protocols exist, the appropriate land management agency will establish the protocols to be used). In known occupied habitat for listed riparian birds, LADWP shall only conduct focused surveys of the Project and adjacent areas within 500 feet. The surveys shall be of adequate duration to verify potential nest sites if work is scheduled to occur during the breeding season. If breeding is confirmed, the USFWS-recommended buffers will be applied and no activities will occur within that buffer.</p> <p>14c. Protocol or focused surveys, as appropriate, should be conducted within one year of start of construction. However, on NFS lands, annual surveys in suitable habitat may be required during construction. These surveys may be modified through the coordination with the USFWS, CDFG, USFS, LADWP and the BLM based on the condition of habitat, the observation of the species, or avoidance of riparian areas during the breeding season.</p> <p>14d. If a territory or nest is confirmed, the USFWS and CDFG shall be notified immediately. On NFS or BLM lands, these agencies would be notified immediately. In coordination with the USFWS, CDFG and the appropriate land management agency, a 300-foot disturbance-free buffer shall be established and demarcated by fencing or flagging. This buffer may be adjusted, provided noise levels do not exceed 60 dB(A) hourly Leq at the edge of the nest site as determined by a qualified biologist in coordination with a qualified acoustician. If the noise meets or exceeds the 60 dB(A) Leq threshold, or if the biologist determines that the construction activities are disturbing nesting activities, the biologist shall notify the</p>

	<p>construction manager, and the construction manager, in consultation with the biologist and USFS, has the authority to halt the construction and shall devise methods to reduce the noise and/or disturbance in the vicinity. This may include methods such as, but not limited to, turning off vehicle engines and other equipment whenever possible to reduce noise, installing a protective noise barrier between the nest site and the construction activities, and working in other areas until the young have fledged. If noise levels still exceed 60 dB(A) Leq hourly at the edge of nesting territories and/or a no-construction buffer cannot be maintained, construction shall be deferred in that area until the nestlings have fledged. All active nests shall be monitored on a weekly basis until the nestlings fledge. No construction or vehicle traffic shall occur within this buffer during the breeding season for these species.</p> <p>14e. The nest must be monitored by a qualified biologist during the construction activities. If the monitor determines that Project activities are disturbing or disrupting nesting activities, the monitor shall notify the construction manager, and the construction manager, in consultation with the biological monitor, has the authority to implement measures to reduce the noise and/or disturbance in the vicinity.</p>
BIO-15	<p><i>Protect coastal California gnatcatcher and its habitat.</i></p> <p>15a. All Project activities taking place within suitable habitat for the coastal California gnatcatcher shall be conducted from September through February, which is outside their breeding season. If these activities cannot be avoided during the breeding season, the following measures shall apply:</p> <p>15b. LADWP shall conduct protocol surveys for coastal California gnatcatchers in areas supporting coastal sage scrub habitat that may be affected by the Project. In known occupied habitat for the California gnatcatcher, LADWP shall only conduct focused surveys for coastal California gnatcatchers. Survey areas shall include a 500-foot buffer around Project disturbance areas.</p> <p>15c. If a territory or nest is confirmed, the USFWS shall be notified immediately; on NFS or BLM lands, these agencies would also be notified immediately. In coordination with the USFWS and the appropriate land management agency, a 300-foot disturbance-free buffer shall be established and demarcated by fencing or flagging. This buffer may be adjusted, provided noise levels do not exceed 60 dB(A) hourly Leq at the edge of the nest site as determined by a qualified biologist in coordination with a qualified acoustician. If the noise meets or exceeds the 60 dB(A) Leq threshold, or if the biologist determines that the construction activities are disturbing nesting activities, the biologist shall notify the construction manager, and the construction manager, in consultation with the biologist, has the authority to halt the construction and shall devise methods to reduce the noise and/or disturbance in the vicinity. This may include methods such as, but not limited to, turning off vehicle engines and other equipment whenever possible to reduce noise, installing a protective noise barrier between the nest site and the construction activities, and working in other areas until the young have fledged. If noise levels still exceed 60 dB(A) Leq hourly at the edge of nesting territories and/or a no-construction buffer cannot be maintained, construction shall be deferred in that area until the nestlings have fledged. All active nests shall be monitored on a weekly basis until the nestlings fledge. No Project activities may occur in these areas unless otherwise authorized by USFWS. LADWP shall obtain incidental take authorization from the USFWS before further activities.</p> <p>15d. Protocol or focused surveys, as appropriate, shall be conducted, at a minimum, within one year of start of construction. These surveys may be modified through the coordination with the USFS, BLM, and CDFG based on the condition of habitat, the observation of the species, or avoidance of nesting areas during the breeding season.</p> <p>15e. Construction activities in occupied gnatcatcher habitat will be monitored by a full-time qualified biologist. The monitoring shall be of a sufficient intensity to ensure that the biologist could detect the presence of a bird in the construction area. At a minimum, one full-time monitor shall be present for every two miles of active construction within occupied habitat. The monitors shall notify the construction manager, and the construction manager, in consultation with the biologist, will have the authority to halt all activities until appropriate corrective measures have been completed.</p>
BIO-16	<p><i>Protect burrowing owl.</i></p> <p>The following measures are proposed to minimize the potential for take of burrowing owl nests during construction associated with the proposed Project.</p> <p>16a. Preconstruction surveys will be conducted throughout the Project site and laydown areas for burrowing owls, possible burrows, and sign of owls (e.g., pellets, feathers, white wash).</p> <p>16b. Occupied burrows will not be disturbed during the breeding season (February 1 through August 31) unless an approved biologist verifies, through non-invasive methods, that both 1) the birds have not begun egg-laying and incubation, and 2) that juveniles from the occupied burrow are foraging independently and are capable of independent survival.</p>

	<p>16c. Occupied burrows will be protected with a 600-foot buffer, if possible.</p> <p>16d. When the destruction of an occupied burrow is unavoidable, the owl(s) will be passively relocated in accordance with the CDFG memo dated October 17, 1995. Relocation efforts will occur at least one week before ground disturbance of the area. A biologist will monitor the success of the relocation. A monitoring plan will be submitted to and approved by CDFG and BLM.</p> <p>16e. Off-site mitigation will be pursued to enhance existing habitat in the region or fund research into the species to enhance survivorship of the species in the region.</p>
BIO-17	<p><i>Protect the bald eagle and golden eagle.</i></p> <p>17a. If construction occurs during bald eagle and golden eagle breeding season, preconstruction surveys shall be conducted, in accordance with USFWS protocol requirements, for the Project area in regions with suitable habitat. Any active nests shall have an appropriate exclusion buffer established. This buffer shall be established based on existing conditions in consultation with the LADWP, USFS, BLM, CDFG and/or USFWS.</p> <p>17b. Whenever bald eagles and golden eagles are observed within 100 yards of the construction area, construction shall be halted and shall not resume until the eagles leave.</p> <p>17c. If a helicopter will be used for construction or maintenance, the aircraft must be no closer than 1,000 feet vertical or horizontal distance from communal roost sites.</p>
BIO-18	<p><i>Protect California condor.</i></p> <p>18a. For all Project activities taking place immediately adjacent to or within known condor-occupied areas, a qualified biologist will monitor all construction activities and assist LADWP in the implementation of the monitoring program. The résumé of the proposed biologist(s) will be provided to the BLM and USFS for concurrence. This biologist(s) will be referred to as the authorized biologist hereafter. The authorized biologist will be present during all activities immediately adjacent to or within known condor-occupied areas. The authorized biologist shall notify the construction manager, and the construction manager, in consultation with the biologist, will have the authority to halt all activities until appropriate corrective measures have been completed. If condors are observed in helicopter construction areas, LADWP shall avoid further helicopter use until the animals have left the area. The authorized biologist will have radio contact with the Project foreman, who will be in radio contact with the helicopter pilot. The biologist will provide information to LADWP to avoid conflicts with condors. All condor sightings in the Project area will be reported to the USFWS and USFS (on NFS lands). LADWP will coordinate with USFWS on the construction schedule and helicopter work areas to determine if any condors have been tracked or observed in the vicinity of the Project area. If condors are observed in helicopter construction areas, LADWP shall avoid further helicopter use until the animals have left the area and the USFWS will be notified immediately. Should condors be found roosting within 0.5 mile of the construction area, no construction activity shall occur between one hour before sunset to one hour after sunrise, or until the condors leave the area. Should condors be found nesting within 1.5 miles of the construction area, no construction activity will occur until further authorization from the USFWS and USFS (on NFS lands).</p> <p>18b. Microtrash. All trash is required to be disposed of as written in the Proper Disposal of Construction Waste Plan for the Project. Additional language has been added to this Plan to address the disposal of microtrash. Workers will be trained on the issue of microtrash – what it is, its potential effects to California condors, and how to avoid the deposition of microtrash. In addition, all workers will properly dispose of their trash throughout the day and daily sweeps of the work area will occur to collect and remove trash in locations with the potential for California condors to occur.</p> <p>18c. California Condor Worker Education Program. LADWP will develop a flyer that will be distributed to all workers on the Project concerning information on the California condor. Information to be included consists of the following: species description with photos and/or drawings indicating how to identify the California condor and how to distinguish condors from turkey vultures and golden eagles; protective status and penalties for violation of the Endangered Species Act; avoidance measures being implemented on the Project; and contact information for communicating condor sightings.</p> <p>18d. Reporting. All California condor sightings in the Project area will be reported directly to the USFWS, USFS, and BLM (as appropriate). Before commencement of helicopter activity, LADWP will coordinate with a USFWS condor biologist to determine if any condors have been tracked or observed in the vicinity of the Project area.</p>
BIO-19	<p><i>Protect California spotted owl.</i></p> <p>Before construction activities within suitable habitat, LADWP shall have a qualified biologist conduct USFS protocol surveys for the California spotted owl to establish or confirm the location of nests within the Project. The</p>

	<p>résumés of the proposed biologists shall be provided to the USFS for concurrence. If nests or breeding pairs are found during the surveys, the limited operating period (LOP) will be applied according to the ANF Land Management Plan (Standard 20 – Part 3). No Project-related activities will be allowed within these dates (February 1 to August 15) or until chicks have fledged. Where a biological evaluation by a qualified ornithologist determines that a nest site would be shielded from planned activities by topographic or other features that would minimize disturbance, the buffer distance may be reduced upon approval of the USFS on NFS lands. In addition, no helicopter overflights shall be authorized without USFS approval. If approved, minimum altitudes will be 300 feet above a territory at an altitude designated by the USFS. This buffer may be adjusted through consultation with the USFS.</p>
BIO-20	<p><i>Protect American badger, Mohave ground squirrel, Tehachapi pocket mouse, and kit fox.</i></p> <p>20a. In areas identified as suitable habitat during the 2008 surveys, preconstruction surveys will occur for badgers, ground squirrels, pocket mice, and kit foxes. If present and feasible, construction would be avoided in or adjacent to occupied habitat during breeding season.</p> <p>20b. LADWP will consult with CDFG to see if a 2081 Permit for incidental take of Mohave Ground Squirrel is required.</p>
BIO-21	<p><i>Protect sensitive bat species.</i></p> <p>21a. LADWP shall conduct a pre-construction survey (e.g., vegetation removal, grading) for roosting bats within 200 feet of Project activities within 15 days before any grading of rocky outcrops or removal of trees (particularly trees 12 inches in diameter or greater than 4.5 feet above-grade with loose bark or other cavities).</p> <ol style="list-style-type: none"> LADWP shall also conduct surveys for roosting bats during the maternity season (March 1 to July 31) within 300 feet of Project activities. Trees and rocky outcrops shall be surveyed by a qualified bat biologist (i.e., a biologist holding a CDFG collection permit and a Memorandum of Understanding with CDFG allowing the biologist to handle bats). Surveys duration shall be a minimum of one day and one evening. The résumé of the biologist shall be provided to the USFS and BLM (as appropriate) for concurrence before any Project activities. If active maternity roosts or hibernacula are found, the rock outcrop or tree occupied by the roost shall be avoided (i.e., not removed) by the Project, if feasible. If avoidance of the maternity roost is not feasible, the bat biologist shall survey (through the use of radio telemetry or other CDFG/USFS/BLM approved methods) for nearby alternative maternity colony sites. If the bat biologist determines, in consultation with and with the approval of the CDFG, USFS, and BLM (as appropriate), that there are alternative roost sites used by the maternity colony and young are not present, no further action is required, and it will not be necessary to provide alternative roosting habitat (i.e., Mitigation Measure BIO-22b would not apply, although Mitigation Measure BIO-22c would still apply). However, if there are no alternative roost sites used by the maternity colony, Mitigation Measure BIO-22b is required. If no active roosts are found, no further action is required. If active maternity roosts are absent, but a hibernaculum (i.e., a non-maternity roost) is present, Mitigation Measure BIO-22b is not necessary, but Mitigation Measure BIO-22c is required. <p>21b. Provision of substitute roosting bat habitat. If a maternity roost will be impacted by the Project, and no alternative maternity roosts are in use near the site, substitute roosting habitat for the maternity colony shall be provided on, or close to, the Project site no less than three months before the eviction of the colony. Alternative roost sites will be constructed in accordance with the specific bats' requirements in coordination with CDFG and ANF. By making the roosting habitat available before eviction (Mitigation Measure BIO-22c), the colony will have a better chance of finding and using the roost. Large concrete walls (e.g., on bridges) on south or southwestern slopes that are retrofitted with slots and cavities are an example of structures that may provide alternative roosting habitat appropriate for maternity colonies. Alternative roost sites must be of comparable size and proximal in location to the impacted colony. The CDFG shall also be notified of any hibernacula or active nurseries within the construction zone.</p> <p>21c. Exclude bats before demolition of roosts. If non-breeding bat hibernacula are found in towers or trees scheduled to be removed or in crevices in rock outcrops within the grading footprint, the individuals shall be safely evicted, under the direction of a qualified bat biologist, by opening the roosting area to allow airflow through the cavity or other means determined appropriate by the bat biologist (e.g., installation of one-way doors). The résumé of the bat biologist shall be provided to the USFS and BLM (as appropriate) for concurrence before any Project activities. In situations requiring one-way doors, a minimum of one week shall pass after doors are installed, and temperatures should be sufficiently warm for bats to exit the roost, because bats do not typically leave their roost daily during winter months in southern coastal</p>

	<p>California. This action should allow all bats to leave during the course of one week. Roosts that need to be removed in situations where the use of one-way doors is not necessary in the judgment of the qualified bat biologist shall first be disturbed by various means at the direction of the bat biologist at dusk to allow bats to escape during the darker hours, and the roost tree shall be removed or the grading shall occur the next day (i.e., there shall be no less or more than one night between initial disturbance and the grading or tree removal).</p> <p>1) If an active maternity roost is in an area to be impacted by the Project, and alternative roosting habitat is available, the demolition of the roost site must commence before maternity colonies form (i.e., before March 1) or after young are flying (i.e., after July 31) using the exclusion techniques described above.</p> <p>21d. Survey for bat nursery colonies. A CDFG-approved biologist shall conduct a habitat assessment for bat nursery colonies before any construction activity. The approved biologist shall then conduct a survey for bat nursery colonies or signs of such colonies before construction. Direct impacts to a nursery colony site shall not be allowed, and approach of, or entrance to, an active nursery colony site shall be prohibited. Before any blasting or drilling in the vicinity of a nursery colony site, the CDFG-approved biologist shall work with the construction crew to devise and implement methods to minimize potential indirect impacts to the nursery colony site from falling rock or substantial vibration (while a nursery colony is active). The methods shall include an option to halt any construction activity that would cause falling rock, substantial vibration impacts, or any other construction-related impact to a nursery colony as determined by the approved biologist, until the colony is inactive. Should falling rock block the entrance to a nursery colony site, the contractor shall work with the approved biologist to reopen an entrance to the site.</p> <p>21e. If habitat must be removed for construction to continue, a two-step removal process will be implemented. The two-step removal process will involve permitted biologists to alter the habitat outside of the season of use (i.e., outside of hibernating/maternity season) to make the habitat less suitable, and the following day the habitat will be removed under the supervision of the permitted biologist.</p>
BIO-22	<p><i>Protect special-status reptile species.</i></p> <p>A qualified biologist with demonstrated expertise with special-status herpetofauna shall monitor all construction activities and assist LADWP in the implementation of the monitoring efforts. The résumé of the proposed biologist will be provided to the USFS or BLM (as appropriate) for concurrence before the onset of ground-disturbing activities. The authorized biologist will be present during ground-disturbing activities immediately adjacent to or within habitat that supports populations of the special-status herpetofauna. Any special-status herpetofauna found within a Project impact area shall be salvaged by the authorized biologist and relocated to suitable habitat outside the impact area. If the installation of exclusion fencing is deemed necessary by the authorized biologist, the authorized biologist will direct the installation of the fence. Clearance surveys for special-status herpetofauna shall be conducted by the authorized biologist before the initiation of construction each day.</p>
BIO-23	<p><i>Protect desert tortoise and habitat loss.</i></p> <p>23a. Preconstruction clearance surveys will be conducted for desert tortoise in the area designated as a "Survey Area" in the West Mojave Plan, "Alternative A" and areas within suitable habitat. If tortoise sign is found, construction activities should either be monitored by a tortoise biologist with a valid permit, or a tortoise-proof fence should be erected to preclude tortoise from the area of impact. If no tortoise sign is found, monitoring by a tortoise biologist would not be required. Instead, a biologist could be on call should a tortoise wander into non-monitored sites.</p> <p>23b. To facilitate the free movement of desert tortoises, roadbeds should not be lowered, and berms placed along dirt roads should not exceed 12 inches or a slope of 30 degrees within the area designated as a "Survey Area" in the West Mojave Plan, "Alternative A" and areas that sign or habitat was found during the preconstruction surveys.</p> <p>23c. Burrows within 100 feet of the construction zone shall be flagged by a person authorized by the USFWS to handle desert tortoises so that the qualified biologist would be able to more easily locate them during construction. The qualified biologist shall be on-site to monitor all construction that occurs in the vicinity of flagged burrows and to watch for desert tortoise.</p> <p>23d. All desert tortoise burrows or pallets in the construction area shall be excavated by the USFWS-authorized biologist.</p> <p>23e. A translocation plan will be approved by the wildlife agencies before removal or handling of tortoise.</p> <p>23f. Desert tortoises that are found above ground during construction and need to be moved from potential harm shall be placed in the shade of a shrub by the USFWS-authorized biologist. Any desert tortoise removed from burrows shall be placed in an unoccupied burrow of approximately the same size as the one</p>

	<p>from which it was removed. Tortoises shall not be placed more than 1,000 feet from where they were found. If an existing burrow is unavailable, the authorized biologist shall construct or direct the construction of a burrow of similar size, shape, depth, and orientation as the original burrow. Desert tortoises moved during inactive periods would be monitored for at least two days after placement in the new burrows to ensure their safety. The authorized biologist shall be allowed some judgment and discretion to ensure that the survival of the desert tortoise is likely.</p> <p>23g. If a tortoise is in a construction or maintenance area and is not moving, adjacent activities would be halted until the authorized biologist is able to move it out of harm's way.</p> <p>23h. Any time a vehicle is parked, the ground around and under the vehicle shall be inspected for desert tortoises before the vehicle is moved. If a desert tortoise is observed, it shall be left to move on its own. If this does not occur within 15 minutes, the authorized biologist shall remove and relocate the tortoise.</p> <p>23i. All construction and maintenance activities in desert tortoise habitat shall be conducted between dawn and dusk.</p> <p>23j. Within potential desert tortoise habitat areas, vehicles shall not exceed 25 miles per hour on access roads during the period of highest desert tortoise activity (March 1 through October 31).</p> <p>23k. Tower foundations or other excavations that pose a potential to entrap or injure tortoise shall be inspected on a regular basis until the foundation or other structure is in place. Excavations also will include an escape ramp where appropriate.</p> <p>23l. A desert tortoise education program will be presented to all personnel who will be onsite at any time, including but not limited to contractors, contractors' employees, supervisors, inspectors, and subcontractors. This program will be presented in English and Spanish, if appropriate, and contain information concerning the biology and distribution of the desert tortoise and other sensitive species, its legal status and occurrence in the proposed Project area, the definition of "take" and associated penalties, the terms and conditions of this biological opinion, measures designed to minimize the effects of construction activities, the means by which employees can facilitate this process, and reporting requirements to be implemented when tortoises are encountered or in cases of non-compliance with the Biological Opinion. The name of each individual trained will be recorded on a sign-in sheet.</p> <p>23m. A litter-control program will be implemented to reduce the attractiveness of the area to opportunistic predators such as desert kit fox, coyotes, and common ravens. Trash and food items will be disposed of properly in predator-proof containers with re-sealing lids. Trash containers will be emptied, and construction waste will be removed daily from the Project area and disposed of in an approved landfill.</p> <p>23n. LADWP shall report any observations of raven predation on desert tortoises in the Project area to CDFG and USFWS.</p> <p>23o. Temporary tortoise-proof fencing will be installed on all areas of known tortoise habitat boundaries to ensure impacts are minimized to the maximum extent possible. An initial tortoise clearance of the fence line will be conducted before fence construction.</p> <p>1) Temporary fencing should consist of 1-inch mesh or 1-inch horizontal by 2-inch vertical mesh (hardware, cloth or plastic) and be installed flush with the ground and extend at least 18 inches above-ground. Temporary tortoise-proof fencing should not be buried. In areas of high rodent activity where plastic mesh is used, temporary fencing may need more frequent monitoring to ensure no breaches exist.</p>
BIO-24	<p><i>Protect arroyo toad and California red-legged frog.</i></p> <p>24a. LADWP shall conduct USFWS-approved protocol surveys for arroyo toads and California red-legged frogs at all locations containing suitable habitat near the proposed construction sites within two years before the start of construction.</p> <p>24b. If arroyo toads are detected, further surveys within the area will not be required and the avoidance measures detailed below will be followed. If no arroyo toads are detected, habitat assessments will be performed on a yearly basis to determine if the area continues to provide suitable habitat; if an area continues to provide suitable habitat, surveys will be repeated every two years until construction is completed. For all areas in which this species has been documented, LADWP shall develop and implement a monitoring plan that includes the following measures in consultation with the USFWS and USFS.</p> <p>1) LADWP shall retain a qualified biologist with demonstrated expertise with arroyo toads to monitor all construction activities in occupied arroyo toad habitat and assist LADWP in the implementation of the monitoring program. The résumés of the proposed biologists will be provided to the USFS for concurrence. This biologist will be referred to as the authorized biologist hereafter. The authorized biologist will be present during all activities immediately adjacent to or within habitat that supports</p>

	<p>populations of arroyo toad.</p> <ol style="list-style-type: none"> 2) All trash that may attract predators of the arroyo toad will be removed from work sites or completely secured at the end of each work day. Before the onset of any construction activities, LADWP shall meet on-site with staff from the USFS and the authorized biologist. LADWP shall provide information on the general location of construction activities within habitat of the arroyo toad and the actions taken to reduce impacts to this species. Because arroyo toads may occur in various locations during different seasons of the year, LADWP, USFS, USFWS, and authorized biologists will, at this preliminary meeting, determine the seasons when specific construction activities would have the least adverse effect on arroyo toads. 3) Any arroyo toads found during clearance surveys shall be reported to the USFWS and the USFS immediately. Clearance surveys shall occur on a daily basis in areas that contain suitable habitat. 4) If the authorized biologist determines that Project activities are disturbing the species, they shall notify the construction manager, and the construction manager, in consultation with the biologist, will have the authority to halt all activities until appropriate corrective measures have been completed. 5) To ensure that diseases are not conveyed between work sites by the authorized biologist or his or her assistants, the fieldwork code of practice developed by the Declining Amphibian Populations Task Force will be followed at all times. 6) LADWP will avoid ground disturbing activities (e.g., grading, stream crossing upgrades, parking) along access roads within a 1.0 mi (1.6 km) buffer of occupied stream habitat for arroyo toads during the activity period for arroyo toads (March through November). This date and buffer may be modified based on the existing temperature regime and habitat conditions, with Angeles National Forest approval. 7) LADWP will limit use of the access roads in areas known to support arroyo toad within a 1.0-mile (1.6 km) buffer to daylight hours only during the activity period for arroyo toads (generally March through November). Use of these roadways during rain events will not occur during the activity period for arroyo toads. Vehicle speeds will be limited to 15 mph (24 kph), and no parking or loitering will occur along the access roads. A qualified biologist must permanently remove from within the Project area any individuals of exotic species, such as bullfrogs, crayfish, and centrarchid fishes, to the maximum extent possible and ensure that activities are in compliance with the California Fish and Game Code. 8) No stockpiles of materials will occur in areas occupied by arroyo toads. 9) Any spills of fluids that may be hazardous to aquatic fauna (gasoline, hydraulic fluid, motor oil, etc.) in areas that may contain arroyo toads will be reported to the USFS and USFWS within one hour. 10) For each ac/ha of arroyo toad occupied habitat that is permanently impacted on the Angeles National Forest, five ac/ha of arroyo toad occupied habitat will be conserved in the vicinity of the impacted habitat (i.e., impacts will be offset at a habitat ratio as required by the final Biological Opinion). <p>24c. If California red-legged frogs are detected, further surveys within the area will not be required and the avoidance measures detailed below will be followed. If no California red-legged frogs are detected, habitat assessments will be performed on a yearly basis to determine if the area continues to provide suitable habitat; if an area continues to provide suitable habitat, surveys will be repeated every two years until construction is completed. For all areas in which this species has been documented, LADWP shall develop and implement a monitoring plan that includes the following measures in consultation with the USFWS and USFS.</p> <ol style="list-style-type: none"> 1) All trash that may attract predators of red-legged frogs will be removed from work sites or completely secured at the end of each work day. 2) Between November 1 and March 31, no work will be authorized within one mile of occupied habitat, and no vehicular crossings at wet fords of those channels will be authorized. The one-mile buffer distance may be reduced based on the topography of the site, with the approval of the USFWS and the USFS. 3) If and as required by USFWS, between April 1 and October 31, no work will be authorized within 0.5 mile of occupied habitat, and no vehicular crossings at wet fords of those channels will be authorized. 4) If and as required by USFWS, from November 1 thru March 31, overflights will be restricted to a minimum altitude of 1,000 feet (305 m) from the stream bottom within 1.0 mile (1.6 km) of a California red-legged frog occupied stream. 5) Before the onset of any construction activities, LADWP shall meet on-site with staff from the USFWS and the authorized biologist. The authorized biologist shall hold a current red-legged frog permit from USFWS. LADWP shall provide information on the general location of construction activities within habitat of the red-legged frog and the actions taken to reduce impacts to this species. Because red-
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	<p>legged frogs may occur in various locations during different seasons of the year, LADWP, USFWS, USFS, and authorized biologists will, at this preliminary meeting, determine the seasons when specific construction activities would have the least adverse effect on red-legged frogs.</p> <ol style="list-style-type: none"> 6) Where construction would occur in habitat where red-legged frogs are widely distributed, work areas will be fenced in a manner that prevents equipment and vehicles from straying from the designated work area into adjacent habitat. The authorized biologist will assist in determining the boundaries of the area to be fenced in consultation with the LADWP and the responsible agency(s). All workers will be advised that equipment and vehicles must remain within the fenced work areas. 7) The authorized biologist will direct the installation of the fence and conduct a minimum of three nocturnal surveys to move any red-legged frogs from within the fenced area to suitable habitat outside of the fence. If red-legged frogs are observed on the final survey or during subsequent checks, the authorized biologist will conduct additional nocturnal surveys if he or she determines that they are necessary in concurrence with the USFWS/CDFG/USFS. 8) Fencing to exclude red-legged frogs will be at least 24 inches in height. 9) Construction activities that may occur near breeding pools or other areas where large numbers of red-legged frogs may congregate will be conducted during times of the year when individuals have dispersed from these areas (i.e., winter) or the species is dormant, unless otherwise authorized by the USFS and USFWS. The authorized biologist will assist LADWP in scheduling its work activities accordingly. 10) If red-legged frogs are found within an area that has been fenced to exclude red-legged frogs, activities will cease until the authorized biologist moves the red-legged frogs. 11) If red-legged frogs are found in a construction area where fencing was deemed unnecessary, work will cease until the authorized biologist moves the red-legged frogs. The authorized biologist in consultation with USFWS/CDFG/USFS will then determine whether additional surveys or fencing are needed. 12) Any red-legged frogs found during clearance surveys shall be reported to the USFWS and the USFS immediately. Clearance surveys shall occur on a daily basis in the work area. 13) If the authorized biologist determines that Project activities are disturbing the species, they shall notify the construction manager, and the construction manager, in consultation with the biologist, will have the authority to halt all activities until appropriate corrective measures have been completed. 14) LADWP shall restrict work to daylight hours, except during an emergency, to avoid nighttime activities when red-legged frogs may be present on the access road. Traffic speed should be maintained at 15 mph or less in the work area. 15) A qualified biologist must permanently remove from within the Project area any individuals of exotic species, such as bullfrogs, crayfish, and centrarchid fishes, to the maximum extent possible, and ensure that activities are in compliance with the California Fish and Game Code. 16) No stockpiles of materials will occur in areas occupied by California red-legged frogs. 17) To ensure that diseases are not conveyed between work sites by the authorized biologist or his or her assistants, the fieldwork code of practice developed by the Declining Amphibian Populations Task Force will be followed at all times. 18) Any spills of fluids that may be hazardous to aquatic fauna (gasoline, hydraulic fluid, motor oil, etc.) in areas that may contain California red-legged frogs will be reported to the USFS and the USFWS within one hour.
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5.0 ENVIRONMENTAL SETTING

The physiography of the Project area in the Kern to Los Angeles County regions includes the flat Antelope Valley gradually rising in elevation (Northern region) and giving way to the foothills of the ANF (Central region). Continuing south, the foothills gradually give way to the City of Santa Clarita (Southern region). Drainages originating from the foothills of the ANF have carried rock detritus and water to the Santa Clarita area. This process has produced several riparian areas, which support a rich, varied, and unique ecosystem. The diversity and distribution of biological resources within the study corridor are a function of the regional climate, soils, and topography. For most of the region, the availability of water or soil moisture is the critical factor that determines the broad distribution of vegetation types and associated wildlife species. Table 5 lists these habitat types including acres and

percentage of total acreage within the proposed Project (refer to Appendices A, B, and C for Project component maps of the vegetation communities).

For conventional ground construction of the lattice towers, the temporary disturbance column in Table 5 takes into account structure staging area, and sites for pulling and tensioning, sleeving and stringing, guard structures, material staging, and concrete batch plants. The permanent disturbance would take into account the structures, spur and access roads. Within the ANF where the terrain is steep and access is limited, the USFS would require that the new double-circuit 230 kV structures be constructed by the use of helicopter. The use of helicopters for the construction of transmission tower structures would eliminate the need for new access roads to structure locations, and would therefore minimize land disturbance associated with crane pads, structure laydown areas, and the trucks and tractors used for delivery of structures to sites. For the new 230 kV line (Proposed Action), helicopter construction is currently identified as not being needed since existing access is within 300 feet of the proposed centerline. During the design phase there may be situations that require helicopter construction, but for this analysis it was not considered. The assumption is that conventional construction would be used and that is what is analyzed below in Table 5 for the new 230 kV line (Proposed Action). Final determinations on helicopter construction areas would generally be made where tower sites have no existing access roads within 300 feet and slopes are greater than 25 percent. Final identification of these tower sites would be determined and agreed upon by USFS, BLM and LADWP.

TABLE 5. VEGETATION TYPES OCCURRING ALONG THE NEW 230 kV LINE, RECONDUCTORING AND THE NEW 230 kV CIRCUIT.

Vegetation Community	Jurisdiction	Total Acreage	Temporary Minimum Disturbance (Ac)	Temporary Maximum Disturbance (Ac)	Permanent Minimum Disturbance (Ac)	Permanent Maximum Disturbance (Ac)	Percentage of Total Habitat Permanently impacted in each jurisdiction
New 230 kV Transmission Line (Proposed Action)							
Agricultural Land	Private	735.34	78.94	78.94	10.25	11.15	1.5%
California Annual Grassland	Private	227.37	24.40	24.40	3.85	5.26	2.3%
Chamise Chaparral	USFS	344.45	38.61	39.38	6.9	10.11	2.9%
Disturbed/developed	Private	97.83	10.49	10.49	1.74	2.49	2.5%
Disturbed/developed	USFS	231.75	24.86	24.86	4.84	7.80	3.4%
Joshua Tree Woodland	Private	320.32	34.35	34.35	4.23	4.23	1.3%
Mojave Creosote Bush Scrub	BLM	203.40	21.82	21.82	2.69	2.69	1.3%
Mojave Creosote Bush Scrub	Private	1185.16	127.78	127.78	15.73	15.73	1.3%
Mojave Wash Scrub	BLM	19.16	2.06	2.06	0.25	0.25	1.3%
Mojave Wash Scrub	Private	58.34	6.26	6.26	0.77	0.77	1.3%
Riversidian Sage Scrub	Private	5.09	0.56	0.56	0.15	0.28	5.5%
Riversidian Sage Scrub	USFS	82.47	8.85	8.85	1.37	1.84	2.2%
Sandy Area other than Beach	Private	3.28	0.35	0.35	0.04	0.04	1.2%
Southern Coast Live Oak Riparian Forest	USFS	20.33	3.01	3.40	0.56	0.69	3.4%
Scrub Oak	USFS						
Southern Mixed Chaparral	Private	39.37	4.22	4.22	1.03	1.87	4.7%
Southern Mixed Chaparral	USFS	81.79	8.77	8.77	1.89	3.24	4.0%
Southern Riparian Scrub	USFS	6.19	0.66	0.66	0.17	0.33	5.3%
Southern Sycamore Alder Riparian Woodland	Private	1.44	0.16	0.16	0.02	0.02	1.4%
Southern Sycamore Alder Riparian Woodland	USFS	20.32	2.18	2.18	0.50	0.50	2.5%
Reconductoring – Segments ABG*							
Agricultural Land	Private	736.94	79.04	79.04	10.41	11.53	1.5%

BARREN RIDGE RENEWABLE TRANSMISSION PROJECT
BIOLOGICAL ASSESSMENT

Vegetation Community	Jurisdiction	Total Acreage	Temporary Minimum Disturbance (Ac)	Temporary Maximum Disturbance (Ac)	Permanent Minimum Disturbance (Ac)	Permanent Maximum Disturbance (Ac)	Percentage of Total Habitat Permanently Impacted in each jurisdiction
California Annual Grassland	Private	226.28	24.27	24.27	3.78	5.10	2.2%
Chamise Chaparral	USFS	304.26	32.65	32.65	8.54	16.07	5.3%
Disturbed/developed	Private	97.83	10.49	10.49	1.86	2.81	2.9%
Disturbed/developed	USFS	235.69	25.28	25.28	4.86	7.77	3.3%
Joshua Tree Woodland	Private	319.89	34.31	34.31	4.22	4.22	1.3%
Mojave Creosote Bush Scrub	BLM	215.91	23.16	23.16	2.85	2.85	1.3%
Mojave Creosote Bush Scrub	Private	1166.83	124.90	124.90	15.37	15.37	1.3%
Mojave Wash Scrub	BLM	17.35	1.86	1.86	0.23	0.23	1.3%
Mojave Wash Scrub	Private	60.00	6.43	6.43	0.79	0.79	1.3%
Riversidian Sage Scrub	Private	6.53	1.19	1.19	0.31	0.59	9.0%
Riversidian Sage Scrub	USFS	85.68	10.30	10.30	2.69	5.07	5.9%
Sandy Area Other than Beach	Private	2.30	0.25	0.25	0.03	0.03	1.3%
Southern Coast Live Oak Riparian Forest	USFS	61.53	6.60	6.60	1.73	3.25	5.3%
Southern Mixed Chaparral	Private	39.56	4.24	4.24	1.03	1.88	4.7%
Southern Mixed Chaparral	USFS	74.74	8.01	8.01	1.69	2.87	3.8%
Southern Riparian Scrub	USFS	6.17	0.66	0.66	0.17	0.33	5.3%
Southern Sycamore Alder Riparian Woodland	Private	3.12	0.53	0.53	0.12	0.21	6.7%
Southern Sycamore Alder Riparian Woodland	USFS	19.61	2.34	2.34	0.54	0.95	4.8%
Reconductoring –Segment K *							
Chamise Chaparral	Private	73.31	7.86	7.86	1.85	3.32	4.5%
Disturbed/developed	Private	400.77	43.18	43.18	6.11	7.45	1.9%
Riversidian Sage Scrub	Private	129.39	13.88	13.88	3.09	5.40	4.2%
Sandy Area Other than Beaches	Private	12.07	1.29	1.29	0.20	0.28	2.3%
Southern Coast Live Oak Riparian Forest	BLM	0.34	0.04	0.04	0.01	0.02	5.9%
Southern Coast Live Oak Riparian Forest	Private	22.20	2.38	2.38	0.63	1.17	5.3%
Southern Mixed Chaparral	BLM	0.40	0.04	0.04	0.01	0.02	5.0%
Southern Mixed Chaparral	Private	253.02	27.14	27.14	6.32	11.3	4.4%
Southern Riparian Scrub	Private	48.38	5.19	5.19	1.13	1.95	4.0%
Southern Sycamore Alder Riparian Woodland	Private	6.06	0.65	0.65	0.17	0.32	5.3%
Southern Willow Scrub	Private	9.10	0.98	0.98	0.12	0.12	1.3%
New 230 kV Circuit*							
Chamise Chaparral	State of California	134.42	21.50	23.83	4.61	7.60	5.7%
Chamise Chaparral	Private	68.63	9.28	10.05	1.73	2.27	3.3%
Chamise Chaparral	USFS	139.37	21.06	23.05	4.73	8.03	5.8%
Disturbed/developed	State of California	11.04	1.18	1.18	0.31	0.58	5.2%
Riversidian Sage Scrub	BLM	3.15	0.34	0.34	0.04	0.04	1.2%
Riversidian Sage Scrub	State of California	137.89	15.12	15.28	2.82	4.26	3.1%
Riversidian Sage Scrub	Private	161.52	17.88	18.15	3.19	4.59	2.8%
Riversidian Sage Scrub	USFS	55.49	5.96	5.96	1.20	1.98	3.6%
Southern Coast Live Oak Riparian Forest	Private	0.68	0.07	0.07	0.01	0.01	1.5%
Southern Coast Live Oak Riparian Forest	USFS	6.11	0.66	0.66	0.08	0.08	1.3%

Vegetation Community	Jurisdiction	Total Acreage	Temporary Minimum Disturbance (Ac)	Temporary Maximum Disturbance (Ac)	Permanent Minimum Disturbance (Ac)	Permanent Maximum Disturbance (Ac)	Percentage of Total Habitat Permanently impacted in each jurisdiction
Southern Cottonwood Willow Riparian Forest	State of California	0.30	0.03	0.03	0.01	0.01	3.3%
Southern Cottonwood Willow Riparian Forest	USFS	7.49	0.80	0.80	0.21	0.40	5.3%
Southern Sycamore Alder Riparian Woodland	Private	1.81	0.19	0.19	0.05	0.10	5.5%
Southern Sycamore Alder Riparian Woodland	USFS	1.78	0.19	0.19	0.05	0.09	5.1%

*The disturbance estimates for reconductoring and new conducting are likely to be overestimates, as they are based on the disturbance impact model used for the new transmission line.

The Barren Ridge Switching Station expansion would consist of permanently impacting 2.7 acres of Mojave Creosote Bush Scrub (Appendix B). The new Haskell Canyon Switching Station (6 acres) would permanently disturb Riversidian Sage Scrub (Appendix C).

5.1 DATA COLLECTION

Collection of biological resources baseline data in the Project area included a review of applicable documents and the identification of resources during several aerial, reconnaissance-level surveys and focused pedestrian surveys conducted by qualified biologists. During the development of alternative corridors for the proposed Project, reconnaissance surveys were conducted on every segment. The surveys consisted of a reconnaissance-level survey conducted aerially from a helicopter or on the ground within a 0.5-mile wide buffer of the proposed transmission line corridor where access was available.

Vegetation community mapping was conducted using the California Gap Analysis Program (GAP), 2005 aerial imaging from the National Agriculture Imagery Program (NAIP) California spatial library, and California Natural Diversity Database (CNDDB) data. USFS Geographic Information System (GIS) habitat data were used as the basis for the habitat-based assessment of the Project study corridors. GIS data layers were mapped within the study corridors (one mile wide biology study corridor) and plotted. The vegetation mapping was conducted using the GAP data but later refined based on field reconnaissance surveys. The reconnaissance-level surveys were conducted in 2008 prior to the protocol surveys being conducted.

Information gathered from the literature review and reconnaissance-level field surveys were used to identify habitat for all threatened and endangered plant and wildlife species with potential to occur within the Project area (Appendices A – E). Protocol surveys were conducted in the spring and summer of 2008, 2009 and 2010 on all Project components not covered in dense chaparral, at a distance of 250 feet either side of the proposed centerline and along existing access roads, to assess the presence of special-status plant and wildlife species (POWER 2010).

5.2 PROTOCOL SURVEYS

Information gathered from the literature review and reconnaissance-level field surveys were used to identify habitat for all threatened and endangered plant and wildlife species with potential to occur within the Project area. Protocol surveys were conducted in the spring and summer of 2008, 2009, and 2010 on all segments to assess the presence of special-status plant and wildlife species (see BR RTP Biological Resources Technical Report appendices).

The study corridors for the surveys were 150 meters (500 feet) wide (250 feet on each side of centerline). Amphibian species and their potential habitat were surveyed up to five miles from the centerline to describe the potential of indirect impacts from construction activities (see BR RTP Biological Resources Technical Report Appendix E). The amphibian site assessment forms were submitted to USFWS and USFS to review. Surveys were conducted based on the site assessment forms and agency feedback.

Prior to conducting field surveys, USFS, USFWS and BLM were consulted to determine survey needs and appropriate survey time frames. Protocol surveys were conducted for the arroyo toad and California red-legged frog, federal- and State-listed plant species, Forest Service Sensitive/Watch plant species, and CNPS List 1 and 2 species. Surveys were also conducted to determine presence of and suitable habitat for California spotted owl, Joshua trees, special-status bat species, and special-status riparian bird species. Additionally, desert habitat and invasive weed surveys were conducted, along with an avian risk assessment (see BR RTP Biological Resources Technical Report Appendices E through N for survey reports).

Table 6 identifies the species for which protocol-level surveys were conducted for the Proposed Action and segments. Table 6 also identifies the appropriate timeframes for protocol surveys as specified by managing entities and includes the location by segment for each.

TABLE 6. PROTOCOL SURVEYS CONDUCTED 2008-2009

Species Scientific Name	Common Name	Survey Protocol	Survey Locations 2008-2009 ¹
<i>Bufo californicus</i>	Arroyo Toad	Six site visits should be made between March 15 and Jul 1 with seven days between site visits. If toads are discovered, the survey should cease. One site visit should be made in April, May, and June; night and daytime surveys should be conducted within the same 24-hour period.	<ul style="list-style-type: none"> • Segment D • Segment G • Dry Canyon • San Francisquito Canyon • Segment H
<i>Rana aurora draytonii</i>	California Red-Legged Frog	Four daytime and four nighttime aquatic and terrestrial habitat surveys for juvenile and adult frogs. Surveys should be conducted June through September and include a non-breeding survey.	<ul style="list-style-type: none"> • Segment G • Segment H • Dry Canyon • San Francisquito Canyon
<i>Strix occidentalis occidentalis</i>	California Spotted Owl	March 15 through August 31, this includes 3 site visits.	<ul style="list-style-type: none"> • Segment D • Segment G • Segment H • Segment J

5.2.1 Special-Status Plant Surveys

Botanical surveys were conducted in 2008, 2009 and 2010 with the goal of locating and mapping special-status plants throughout the Project area (see BR RTP Biological Resources Technical Report Appendix F). The surveys were floristic, meaning that all plants observed were identified to the taxonomic level needed to determine whether they were special-status plant species. Exceptions to this included instances where characteristics essential for identification were not present during the field survey period. Botanists identified all plant species detected during field surveys using personal knowledge of the plants and keys in *The Jepson Manual* (Hickman 1993). Scientific nomenclature in this report mainly follows Hickman (1993). Common names are derived from Hickman (1993) and CalFlora (2008). The survey methodology generally followed the U.S. Fish and Wildlife Service's (USFWS) *Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed and Candidate Plants* (USFWS 1996a), and the recommended botanical survey guidelines of the California Department of Fish and Game (CDFG 2000) and the California Native Plant Society (CNPS 2001). Areas with dense, impenetrable chaparral, and areas with very steep slopes that posed a safety hazard to surveyors, were not surveyed. Within the

surveyed segments, botanists used an intuitive approach to determine the route taken during meandering transects. The intuitive approach, recommended by USFS Botanist Katie VinZant, uses the botanist's knowledge of the preferred habitat of special-status plants to focus the survey effort on sites most likely to support them.

The 2009 surveys covered both the proposed access roads and 500-foot survey corridor in the section of the redesigned alignment that were not surveyed in 2008. All access roads were limited to a 20-foot buffer zone on either side of the proposed route, including the spur roads to existing transmission lines.

The botanical surveys were performed during the time of year that most species would be detectable on both USFS land and BLM-managed land. Segments A, D, G, I, J and H were surveyed for special-status plant species along a 500-foot corridor. Private property was not surveyed. Additional data was also gathered from USFS botanists and from Southern California Edison's (SCE) Antelope Pardee project, which overlaps with the BRRTP area. Many large areas surveyed in 2008 burned in 2007 or within the last five years, and abundant and diverse displays of annual and perennial herbs were observed in these areas. However, it is possible that the plant species' diversity and density observed during the 2008 and 2009 surveys in the unburned portions of the Project area were lower than what would be seen in an optimal year.

Botanists recorded species observations with Trimble GEO-XT hand-held Global Positioning System (GPS) units using Terrasync software. These units were pre-loaded with maps of the proposed transmission line corridors, buffers, and USGS topographic maps as background files. GPS units were used for navigation, and to collect locational data (points and polygons) when special-status plant species were found.

5.2.2 Special-Status Amphibian Surveys

In preparation for surveys for special-status amphibians, current maps of alternative transmission segments for the Project were developed and CNDDB records downloaded for locations of special-status amphibians and critical habitat. Areas along the segments were visited in April and early May 2008 to assess areas to survey. More areas were surveyed in late May and June 2008 as proposed segment corridors moved, or areas were found by other biologists (such as botanists) that suggested possible amphibian habitat due to the presence of ponded water and tadpoles. Protocol surveys were initiated in 2008 and continued in 2009 for the California red-legged frog and the arroyo toad (see BRRTP Biological Resources Technical Report Appendix E). Surveys were continued in 2010 for the arroyo toad, but not for the California red-legged frog.

Many of the transmission corridors are on high, dry, rugged ridges, and most of the amphibian habitat in the ANF mountains occurs on canyon bottoms in creeks and unnamed tributaries. Concern has been expressed by the ANF about indirect impacts to sensitive-species amphibians, including disturbance such as sediment runoff flowing downhill from transmission line construction activity into drainages below. This concern was taken into account when assessing possible impacts of transmission line construction on the amphibian species of concern.

For the arroyo toad, the protocol states that areas within one kilometer of known arroyo toad sites shall be considered occupied. Thus, overall, one mile from the proposed segment was considered when searching for potential special-status amphibian species habitat. Further, potential impacts of transmission line construction, including tower assembly and installation or replacements, were taken into account in relation to the rugged topography of the mountains. When stream habitat was near or directly downslope from the proposed transmission line segments, sites were assessed for potential impact to sensitive-species amphibians. When a stream was within one mile of a transmission segment, but separated by several drainages and ridges, it was not considered as an area where indirect impacts were probable or possible.

The California red-legged frog protocol calls for eight surveys: six nocturnal and two diurnal. At least two of the surveys (one diurnal and one nocturnal) must be completed during the non-breeding season from July 1 to September 30. The other surveys must be completed during the breeding season from January 1 to June 30 (USFWS 2005b). The arroyo toad protocol calls for six surveys, each consisting of a diurnal and nocturnal portion, conducted during the breeding season from March 15 to June 30 (USFWS 1999b).

5.2.3 Desert Habitat Assessment

As part of efforts to determine potential habitat usage of the Project area by desert tortoise, Mohave ground squirrel, kit fox, and burrowing owl, biologists recorded data on disturbance quality and quantity and vegetation composition while walking meandering transects within the survey corridors, including Segments A, B, C, D, E, F1, F2, H1, 115th and the desert portion of I (see BRRTP Biological Resources Technical Report, 2011). Species presence as detected by direct observation of animals, burrows, calls, tracks, scat, or other sign were also noted and their locations recorded using GPS. The majority of the surveys were conducted on foot; however, when disturbance was high, or development was present, vehicles were used in order to maximize efficiency. Areas that were marked as private property or to which access could not be safely obtained were not surveyed.

5.2.4 Avian Habitat Assessment

Surveys were conducted on ANF in June and August 2008 to evaluate suitable habitat for special-status bird species, including southwestern willow flycatcher, least Bell's vireo, western yellow-billed cuckoo, and coastal California gnatcatcher (see BRRTP Biological Resources Technical Report, 2011). Pre-field work included reviewing aerial photographs of the ANF and searching for existing recorded occurrences. Surveys occurred on Segments D, G, H, I, and J within 500-foot corridors. Potential habitat was defined as habitat that can support both breeding and foraging needs of the species. Both pedestrian and vehicular surveys were conducted as situations dictated. Particular attention was given to areas with previous records of special-status bird species and to riparian and coastal sage scrub habitats. Habitat was recorded with datasheets, photos, and GPS points that were subsequently incorporated into a GIS database.

6.0 SPECIES ACCOUNTS AND STATUS OF SPECIES IN THE ACTION AREA

This section provides an overview of the listing status, ecology and local distribution for the sixteen species identified by USFWS, and three additional identified plant species, that may be affected. The information is based on relevant literature, recovery plans, and data provided by USFS, USFWS or BLM. Data from recent project area surveys conducted from 2008 through 2010 are included, as appropriate. Refer to Appendices A – E for maps of the biological resources for each of the Project components.

6.1 PLANTS

The USFWS species list indicated that four federally listed species have the potential to occur. However, based on habitat surveys conducted, records search, and discussion with the ANF and BLM, an additional three federally listed species of plants were identified with the potential to be impacted. All seven species are discussed in detail below.

6.1.1 Braunton's milk-vetch

Regulatory Status

Braunton's milk-vetch (*Astragalus brauntonii*) is federally listed as endangered (62 FR 4172 4183), and placed on List 1B.1 by the CNPS (CNPS 2011). Braunton's milk-vetch is endemic to Southern California, and has been documented only in Los Angeles and Orange Counties. Braunton's milk-vetch is threatened by development, vegetation/fuel management activities, and alteration of local fire regimes (CNPS 2011).

Critical Habitat

There is no designated critical habitat for this species within the Project area (71 FR 66373 66423).

Life History and Habitat Requirements

Braunton's milk-vetch is a short-lived perennial shrub in the legume family (*Fabaceae*) that typically occurs in fire-afflicted areas in dry, open chaparral below 2,100 feet in elevation. Braunton's milk-vetch was historically found in gravelly clay soils overlaying granite and sandstone, but is currently associated with carbonate soils derived from scattered limestone lenses; soil specificity accounts for its limited distribution. Braunton's milk vetch typically appears the spring following a chaparral fire, living for a few years before senescing or being crowded out by developing vegetation (Skinner 1991). Braunton's milk-vetch has white, wooly foliage with bright purple inflorescences blooming from January through August and can reach a height of six feet.

Survey Results

This species was not identified during botanical surveys conducted for this Project in 2008, 2009, and 2010. Suitable habitat was identified within the Project area, but soil requirements would reduce its likelihood to occur. It is known from 34 recorded occurrences in CNDDDB, none of which is in the Project's vicinity (CDFG 2011a). The Consortium of California Herbaria (CCH) lists 47 specimens, 27 of which are from Los Angeles County (CCH 2011).

Distribution and Occurrence in Project Area

CNDDDB lists 34 occurrences of this species (CDFG 2011a). There are no known populations of this species near the Project area, but there are extensive areas vegetated with chaparral that burned in 2007. Based on its geographic range and habitat preferences, Braunton's milk-vetch has a potential to occur on the proposed new 230 kV line and the reconductoring section that would parallel the proposed new 230 kV line. However, its soil requirements would likely restrict this species to a lower probability of

occurrence. Braunton's milk-vetch was not observed during botanical surveys conducted for this Project in 2008, 2009, or 2010 on ANF lands (Appendix E).

6.1.2 Nevin's barberry

Regulatory Status

Nevin's barberry (*Berberis nevinii*) is federally and State listed as endangered (63 FR 54956 54971, CDFG 2011b), and placed on List 1B.1 by the CNPS (CNPS 2011).

Critical Habitat

There is no designated critical habitat for this species within the Project area (73 FR 8411 8440).

Life History and Habitat Requirements

Nevin's barberry (*Berberis nevinii*) is a yellow-flowered evergreen rhizomatous shrub in the barberry family (*Berberidaceae*). It reaches three to twelve feet in height and re-sprouts vigorously after fire. It blooms from March to June (CNPS 2011). Nevin's barberry grows in small, discrete, localized populations in two habitat types: sandy and gravelly places along the margins of dry washes, and coarse soils in chaparral. It ranges from 900 to 2,700 feet in elevation (Hickman 1993, USFS 2005). This species appears to have a low fecundity due to sporadic production of viable seed (USFS 2005). Threats to the species include naturally small population sizes, wildfire suppression activities, development, road maintenance, and illegal trash dumping (USFS 2005, CNPS 2011). Nevin's barberry is endemic to southern California, and has been documented in Los Angeles, San Bernardino, and Riverside Counties. Its range extends from the foothills of the San Gabriel Mountains to the foothills of the Santa Ana and Palomar Mountains (USFS 2005). The CNDDDB (CDFG 2011a) lists 34 occurrences for this species, two of which are on the ANF. The USFS (2005) estimated that the total population size was between 500 and 1,000 plants.

Survey Results

This species was not identified during botanical surveys conducted for this Project in 2008, 2009, and 2010. However, a population is known to be present around LADWP's Power Plant 2 in San Francisquito Canyon and suitable habitat was identified within the ROW. A second population is known within the ANF in Lopez Canyon. CNDDDB lists a total of 34 recorded occurrences of this species (CDFG 2011a), while CCH lists 150 specimens, including 73 that are from Los Angeles County (CCH 2011).

Distribution and Occurrence in Project Area

In 2005, there were two confirmed population occurrences totaling 138 acres within the ANF, in San Francisquito and Lopez canyons. There is a known population of this species near LADWP Power Plant #2 in San Francisquito Canyon, which is adjacent to the proposed new 230 kV line. No individuals of this species were found during botanical surveys conducted for this Project in 2008, 2009 and 2010 on ANF lands. However, based on its geographic range, habitat preferences, and consultation with USFS, Nevin's barberry has a likely potential to occur on the proposed new 230 kV line and the reconductoring component that would parallel the proposed new 230 kV line.

6.1.3 San Fernando Valley spineflower

Regulatory Status

San Fernando Valley spineflower (*Chorizanthe parryi* var. *fernandina*) is a candidate species for federal listing, and is State-listed as endangered (CDFG 2011b). The CNPS online Inventory (CNPS 2011) includes it on List 1B.1, and the USFS tracks it as a "sensitive" species.

Critical Habitat

Because this species is a candidate for listing, no critical habitat has been designated.

Life History and Habitat Requirements

San Fernando Valley spineflower is a white-flowered annual herb in the Buckwheat Family (*Polygonaceae*) that blooms from April to July (CNPS 2011). It occurs in sandy places associated with coastal scrub, valley and foothill grassland, from 490 to 4,000 feet (Hickman 1993, CNPS 2011, USFS 2005). Threats include urban development on private land and invasive non-native plants (CNPS 2010).

Survey Results

This species was not identified during botanical surveys conducted for this Project in 2008, 2009, and 2010. Although there are 20 recorded occurrences of this species within CNDDDB, ten of which are in the Project vicinity, none of these is within the ANF (CDFG 2011a). However, suitable habitat was identified for this species within the Project area, which is within the species' range. CCH lists 60 specimens for this species, mostly collected from Los Angeles County (CCH 2011).

Distribution and Occurrence in Project Area

San Fernando Valley spineflower is endemic to the Los Angeles Basin and neighboring valleys and mesas (CNPS 2011, USFS 2005). Most of its former range in Los Angeles and Orange Counties has been developed. The CNDDDB (CDFG 2011a) lists 20 occurrences for this species, of which 11 are noted as *presumed extant* and the other nine are noted as *possibly extirpated*. Ten of the presumed extant locations are within the vicinity of the Project area (e.g., Newhall Ranch, Castaic, and Magic Mountain). There are no known or historic locations for San Fernando Valley spineflower from ANF lands. Based on current range and habitat preferences, this species has a likely potential to occur within the Project area. No individuals of San Fernando Valley spineflower were located during 2008, 2009, and 2010 protocol-level surveys conducted for this Project on ANF lands.

6.1.4 Slender-horned spineflower

Regulatory Status

Slender-horned spineflower (*Dodecahema leptoceras*) is federally and State listed as endangered (52 FR 36265 36270, CDFG 2011b). The CNPS online Inventory (CNPS 2011) includes it on List 1B.1.

Critical Habitat

There is no designated critical habitat for this species (USFWS 2010b).

Life History and Habitat Requirements

Slender-horned spineflower (*Dodecahema leptoceras*) is a pink-flowered annual herb in the Buckwheat Family (*Polygonaceae*) that blooms from April to June (CNPS 2011). Slender-horned spineflower grows on sandy soils of alluvial fans and stream terraces within chaparral, cismontane woodland and coastal scrub from 650 to 2,500 feet (Hickman 1993, CNPS 2011). Most occurrences are on flood-deposited river terraces associated with later successional stages of alluvial scrub habitat (USFS 2005). Current threats include alteration of fire regimes, development, sand and gravel mining, flood control, foot traffic, proposed reservoir construction, recreational activities, vehicles, and invasive non-native plants (CNPS 2011).

Survey Results

This species was not identified during botanical surveys conducted for this Project in 2008, 2009, and 2010. Suitable habitat was identified for this species within the ROW, but no occurrences are recorded within the

Project area. One historic occurrence from 1893 is known from the Project's vicinity (CDFG 2011a). CCH lists 72 specimens for this species, 20 of which are from Los Angeles County (CCH 2011).

Distribution and Occurrence in Project Area

Slender-horned spineflower is endemic to the coastal sides of the Transverse and Peninsular ranges in Los Angeles, Riverside, and San Bernardino Counties. The CNDDDB (CDFG 2011a) lists 35 occurrences, the majority occurring in Riverside and San Bernardino Counties. There is a potential for one occurrence record, in Big Tujunga Wash, that may extend into the southern part of the ANF (CDFG 2011a). One historic location, from 1893, is known from a non-specific location in the vicinity of Newhall; this location is in the vicinity of the Project area (CDFG 2011a). Many historical occurrences of slender-horned spineflower were lost to urbanization and stream channelization.

Based on current range and habitat preferences, slender-horned spineflower has a likely potential to occur on the proposed new 230 kV line route. Marginally suitable habitat may occur within chaparral and scrub habitat within the Project area. One historic location (1893) is known within the vicinity of the Project area. No individuals of slender-horned spineflower were located during 2008, 2009, and 2010 protocol-level surveys conducted for this Project on ANF lands.

6.2 BIRDS

6.2.1 California Condor

Regulatory Status

California condor (*Gymnogyps californianus*) is listed as a federal and State endangered species (32 FR 4001, CDFG 2011c).

Critical Habitat

No designated critical habitat for the California condor located is within the Project area (42 FR 47840 47845). Designated critical habitat is located approximately two miles west of the Project area in the Sespe-Piru Condor Area and approximately four miles north at Tejon Ranch.

Life History and Habitat Requirements

The California condor is a habitat generalist, nesting in areas as diverse as chaparral and snow-covered montane forests. Nesting sites typically occur in cliff cavities and large rock outcrops, and large trees and roosting sites are usually nearby (Snyder and Schmitt 2002, USFWS 1996). Both types of sites require isolation from human disturbance. Foraging tends to occur in relatively open foothill grasslands and oak savannah habitats, somewhat separate from nesting habitat. Occasionally, densely vegetated areas may be used, and possibly even in chaparral and forest, though this has not been very abundantly observed. Condors require sufficient food availability, open habitat to locate and reach food sources, and consistent thermal wind patterns for soaring. Because of their large mass, condors tend to only flap their wings during takeoff and landing, meaning that foraging usually only occurs when there are winds strong enough to sustain flight.

Pair formation generally begins in December and lasts throughout spring. Once a pair forms, they will remain together year-round for life. Several weeks prior to egg-laying, a network of alternate nest sites are visited until one is selected by the female. Nest investigations consist of the pair entering the site and spending several hours moving organic substrate about with their bills and feet in the area where egg-laying will occur (Snyder and Schmitt 2002). The network of nest sites used by a single pair may be distributed over an area many miles in diameter. After females select a suitable nest, they lay a single egg (averaging 281 grams), usually between early January and early April (Snyder and Schmitt 2002).

Incubation is a cooperative “tag-team” effort between parents and lasts from 53 to 60 days (Snyder and Schmitt 2002), resulting in the hatching of a white downy chick with open eyes.

Nestlings are brooded by both parents nearly constantly for the first two weeks, after which there is a rapid decline until only erratic night-brooding occurs from about one month of age (Snyder and Snyder 2000). During the initial two-week period, parents invest a large amount of time feeding, grooming and inspecting their young when not brooding. Feeding, like all other parental duties, is performed by both parents and is accomplished by regurgitation (Snyder and Snyder 2000). After one month of age, attendance by parents declines substantially to stabilize at a level that will be maintained until fledging occurs at approximately six months of age. Post-fledging care by parents lasts approximately six months and consists of intermittent feedings with ever-growing time lapses between each occurrence. This prolonged parental care is most likely the reason that condors do not breed annually on a regular basis.

Condors feed primarily on mammalian carrion, and occasionally on the remains of reptiles and birds. In recent years this diet has ranged from large to relatively small prey, and has included domestic animals, mule deer (*Odocoileus hemionus*), coyotes (*Canis latrans*), ground squirrels (*Spermophilus* spp.), common gray foxes (*Urocyon cinereoargenteus*), long-tailed weasels (*Mustela frenata*), kangaroo rats (*Dipodomys* sp.), and Botta’s pocket gophers (*Thomomys bottae*) (Snyder and Schmitt 2002; USFWS 1996).

Survey Results

No surveys were conducted for this species for this Project. Instead, USFWS supplied coordinates for California condor flights in the Project vicinity in 2008 (USFWS 2008b) and 2009 (USFWS 2009a). There is suitable habitat for this species throughout much of the Project area, and according to the USFWS location data California condors are most prevalent around the Tehachapi Mountains, along the far western side of the Project, and in the mountains south of the Project.

Distribution and Occurrence in Project Area

California condors are found locally northwest (Tehachapi Mountains), southwest (Piru Lake), and south (San Gabriel Mountains) of the Project area, and have been sighted in numerous locations within the Project area (Appendix D) (USFWS 2008b, USFWS 2009a). Local populations of condors are not yet considered to be self-sustaining (Snyder and Schmitt 2002). Within the Project area, condors have been recorded the most on the southern end of the proposed reconductoring component route just south of the ANF, and near Castaic Power Plant (Appendix D). Although they were not identified during any Project surveys between 2008 and 2010, California condors are expected to be present in the general Project area.

6.2.2 Coastal California Gnatcatcher

Regulatory Status

The coastal California gnatcatcher (*Polioptila californica californica*) is a federal Threatened species and Department of Fish and Game Species of Special Concern (58 FR 65088 65096, CDFG 2011c).

Critical Habitat

Designated critical habitat for the coastal California gnatcatcher is located within the Project area within the proposed reconductoring component route just south of the ANF (72 FR 72009 72213). Approximately 2.9 miles of the Project is within Unit 13 of the designated critical habitat for the coastal California gnatcatcher (Appendix D).

Life History and Habitat Requirements

The coastal California gnatcatcher is an obligate permanent resident of low coastal sage scrub—including Diegan, Riversidian, and Venturan sub-associations—in arid washes on mesas and slopes in Southern California (Atwood and Bontrager 2001). In Los Angeles County, coastal California gnatcatchers typically inhabit below 500 meters in elevation. Nests are built in shrubs, with the first eggs appearing in late March. Second broods may be possible, depending on timing of the first and duration of the breeding season. Diet mainly consists of arthropods.

Survey Results

This species was not identified during avian habitat assessment surveys conducted in 2008. Suitable habitat was identified during the surveys within and around the corridor for the new 230 kV circuit (POWER 2009). Additionally, POWER identified at least one individual on multiple occasions during winter 2009/2010 within the Project ROW south of critical habitat Unit 13. There are multiple occurrences recorded in the Project vicinity in CNDDB (CDFG 2011a).

Distribution and Occurrence in Project Area

Its entire range extends from coastal Southern California to Baja California. At least one coastal California gnatcatcher was observed within the Project area on the proposed reconductoring route south of the ANF during winter 2009/2010, and this species is expected to be present.

6.2.3 Southwestern Willow Flycatcher

Regulatory Status

The southwestern willow flycatcher (*Empidonax traillii extimus*) is a State- and federally listed Endangered species (CDFG 2011c). It was listed by the State of California in 1992 (Rourke et al. 2004) and by USFWS in 1995 (60 FR 10693 10715).

Critical Habitat

There is no designated critical habitat for the southwestern willow flycatcher located within the Project area (70 FR60886 61009). The closest designated critical habitat for this species is the Kern Management Unit, located approximately 32 miles north of the existing Barren Ridge Switching Station and immediately east of Lake Isabella.

Life History and Habitat Requirements

Southwestern willow flycatcher breeding habitat is characterized by dense riparian areas along lentic water, specifically near surface water or amidst saturated soil (USFWS 2002a, BLM 2006). This habitat typically occurs along lower gradient streams and/or open valleys, as opposed to fast-moving or narrow streams (USFWS 2002a). Breeding habitat vegetation is usually composed of species such as willows, boxelder (*Acer negundo*), tamarisk (*Tamarix ramosissima*), and Russian olive (*Eleagnus angustifolia*) (USFWS 2002a), with the two most common dominants being willow and tamarisk (Durst et al. 2007). Approximately half of the known southwestern willow flycatcher territories are dominated by native plant species, which may include various willow species, cottonwood, boxelder, ash (*Fraxinus* sp.), alder (*Alnus* sp.), and/or buttonbush (*Cephalanthus occidentalis*) at lower elevation sites; at higher elevation sites vegetation is usually dominated by a willow species (USFWS 2002a). While lower elevation sites will usually contain distinct overstories and understories, higher elevation sites typically do not. Habitat patches dominated by non-native species are usually dominated by tamarisk or Russian olive. At sites of mixed native and non-native dominance, the understory is typically dominated by non-native plants, while the overstory is typically dominated by native plants. Canopy height tends to be inversely related to elevation, with trees and shrubs ranging from 2 to 30 meters in height. The shrub layer and the canopy are typically dense, with the vertical area in between variable in density (Sogge et al. 1997, USFWS 2002a).

Breeding territory size can be from 0.25 to 5.7 acres, with most between 0.5 to 1.2 acres. Territories of polygynous males are usually larger than those of monogamous males and will generally consist of two females and one male. Southwestern willow flycatchers are not known to nest in habitat that is less than 10 meters wide except uncommonly when such patches extend out from larger, wider patches (Sogge et al. 1997, USFWS 2002a).

Breeding season for southwestern willow flycatcher generally occurs during spring and summer (USFWS 2002a, BLM 2006). Pairs are usually formed up to two weeks after completion of migration, with nest-building commenced by the female within another week. Clutches are generally laid anywhere between May 24 to July 31 depending on specific location and population, although no viable clutches are known to have been laid past July 16. Second clutches are uncommon if first clutches are successful (Sogge et al. 1997, USFWS 2002a). Pairs may build up to three nests within a single breeding season if the first two fail, although clutch size decreases with each instance. Incubation typically lasts 12 to 13 days from the time that the last egg is laid, with fledging occurring 12 to 15 days after that. In all, the time from spring arrival to final fledging is generally from early May to late August, although this may vary a week or more in any given year or site (USFWS 2002a). Pairs at lower elevations or in southern populations usually begin breeding several weeks earlier than those at higher elevations or in northern populations.

Little is known about southwestern willow flycatcher migration or wintering habits, although it is known that all subspecies of willow flycatcher overwinter in Mexico, Central America, or northern South America (Sogge et al. 1997, USFWS 2002a, BLM 2006). Characteristics of willow flycatcher wintering habitat include lentic water and associated vegetation, patches of dense woody shrubs, patches and/or stringers of trees, and open or semi-open areas (USFWS 2002a). Southern migration for the southwestern willow flycatcher generally occurs from late July to late September, with northern migration occurring from mid-April to mid-June.

Survey Results

This species was not identified during avian habitat assessment surveys conducted in 2008. Suitable habitat was identified during the surveys in San Francisquito, Dry, and South Portal Canyons (POWER 2009). In 1999 (Tierra Madre Consultants 1999) and 2001 (PCR Services Corporation 2001) willow flycatchers were identified in San Francisquito Canyon by Tierra Madre Consults and PCR Services Corporation, respectively. However, due to the timing of the surveys, the birds were indistinguishable to subspecies. There are no recorded occurrences of this species in the Project vicinity in CNDDB (CDFG 2011a).

Distribution and Occurrence in Project Area

As of 2006, USGS estimated 190 southwestern willow flycatcher territories in California, down from an estimated high of 220 in 2002 (Durst et al. 2007). Most southwestern willow flycatcher territories can be found along the South Fork of the Kern River, along the Owens River between Pleasant Valley Reservoir and Warm Springs Road, along the San Luis Rey River downstream of Lake Henshaw, and along the Santa Margarita River at Camp Pendleton (USFWS 2002a).

Willow flycatchers were observed in San Francisquito Canyon during separate surveys in 1999 and 2001 by Tierra Madre Consultants (Tierra Madre Consultants 1999) and PCR (PCR Services Corporation 2001). However, due to the timing of the 2001 surveys, the birds were indistinguishable to subspecies as all subspecies of northbound willow flycatchers may potentially migrate through San Francisquito Canyon during the survey period. Additionally, 2008 habitat surveys identified suitable habitat for this species in two different locations: Dry Canyon and San Francisquito Creek (POWER 2009). Dry Canyon is a wide canyon with a sandy and rocky base. It contains an abundance of willow and mulefat, along with larger trees such as cottonwoods. San Francisquito Creek contains intermittent sections of dense riparian vegetation and wide, open-canopy streambed. These are tributaries to the Santa Clara River, where there

have been sightings in the past. Southwestern willow flycatcher is expected to have a possibility of occurring along the proposed new 230 kV line route and reconductoring component that would parallel the proposed new 230 kV line.

6.2.4 Least Bell's Vireo

Regulatory Status

Least Bell's vireo (*Vireo bellii pusillus*) is a State and federal Endangered species and a USFWS Bird of Conservation Concern (CDFG 2011c). It was listed by the California Fish and Game Commission in 1980 (Kus 2002) and by USFWS in 1986 (51 FR 16474 16482). The designation as a Bird of Conservation Concern is given to the Bell's vireo species as a whole, not specifically to the least Bell's vireo subspecies (USFWS 2008d).

Critical Habitat

There is no designated critical habitat for this species located within the Project area. Designated critical habitat Unit B is located approximately 5.5 miles west of the Project area within the Santa Clara River (59 FR 4845 4867).

Life History and Habitat Requirements

Least Bell's vireo has similar breeding habitat requirements to the southwestern willow flycatcher. Least Bell's vireos require a dense understory for nesting and a dense canopy for foraging, and are typically found in riparian habitat dominated by willow species (USFWS 1998b). When suitable upland habitat is adjacent to riparian habitat within a pair's territory, pairs have been known to nest within the upland habitat, especially following extensive flooding of riparian areas. Least Bell's vireo has also been observed to use upland habitat for foraging, specifically focusing on laurel sumac (*Malosma laurina*) and elderberry (*Sambucus mexicana*) for food sources. While individuals may winter in riparian woodlands, they are more likely to winter in arroyos within mesquite scrub vegetation, in shrubby areas with palm groves, in agricultural hedgerows, and in rural residential areas. Migration distances have been known to range up to 2,000 miles to southern Baja California (USFWS 1998b, Kus 2002), but vireos have also been known to overwinter in California less frequently (Kus 2002).

Least Bell's vireo breeding season generally encompasses spring and summer. They begin arriving at breeding grounds in mid-March and early April and will depart from late July through late September (USFWS 1998b). Some individuals have been known to extend their stays into the fall or even over the winter. Breeding territories range in size from 0.5 to 7.5 acres. Nests are usually constructed within one meter of the ground, with construction beginning a few days after pairs form and lasting over four to five days. Eggs take about two weeks to hatch, with an additional 10 to 12 days until young have fledged. Pairs may construct up to five nests during a single breeding season, but typically raise only one or two clutches (Kus 2002).

Survey Results

This species was not identified during avian habitat assessment surveys conducted in 2008. Suitable habitat was identified during the surveys in San Francisquito, Dry, and South Portal Canyons (POWER 2009). There are multiple occurrences recorded in CNDDB, the closest being a population at Castaic Lagoon that was identified during ten recurring visits in 2005 (CDFG 2011a). Several other occurrences are mapped within San Fernando and the Santa Clara River.

Distribution and Occurrence in Project Area

The historical range of the least Bell's vireo encompassed coastal Southern California, the Owens Valley and Death Valley, the Sacramento and San Joaquin Valleys, and coastal Baja California. The current

range is estimated to encompass only the coastal areas of Southern California and Baja California (USFWS 1998b). There are no known least Bell's vireo populations within the Project area. However, in 2005, least Bell's vireo individuals were observed during ten separate site visits to a location approximately 0.5 mile south of the proposed reconductoring component area at Castaic Lagoon; the highest number of birds counted during a single visit was 15 individuals, including adults and juveniles (CDFG 2011a). Suitable habitat was identified in Dry Canyon during 2008 habitat surveys within the new ROW for the proposed 230 kV transmission line (POWER 2009). Least Bell's vireo is expected to be present in the area around the reconductoring component near Castaic Lake, and have a possibility of occurring in the proposed new 230 kV transmission line area.

6.2.5 Western Yellow-billed Cuckoo

Regulatory Status

The western yellow-billed cuckoo (*Coccyzus americanus occidentalis*) is a federal Candidate, State Endangered, and USFS Sensitive species, as well as a Fish and Wildlife Service Bird of Conservation Concern (CDFG 2011c).

Critical Habitat

This species is a Candidate for listing and does not have any designated critical habitat.

Life History and Habitat Requirements

This species inhabits nests in riparian forests along the broad, lower flood-bottoms of larger river systems. It prefers to nest in willow and cottonwood forests with understories of blackberry, nettles, or wild grape (Hughes 1999, 66 FR 38611 38626). In California, cottonwood trees have been observed to be of particular importance to western yellow-billed cuckoos for foraging. California individuals have also been observed to occupy large areas of riparian habitat, with one home range study on the Sacramento River averaging approximately 25 acres of riparian habitat for nesting pairs and a separate study on the South Fork of the Kern River reporting home ranges of approximately 42 acres.

Breeding is generally from May to October, with western populations typically breeding between two and twelve weeks later than eastern populations that are along the same latitude (Hughes 1999). However, this can also result in the breeding season being between one and three months shorter in western populations of yellow-billed cuckoos than in eastern populations. For western yellow-billed cuckoos, nesting peaks from mid-June to August, and second broods are typically not observed due to the shorter nesting season (Hughes 1999, 66 FR 38611 38626).

Western yellow-billed cuckoos typically arrive at their breeding grounds starting in mid- to late May, approximately four to eight weeks later than eastern yellow-billed cuckoos at the same latitude (Hughes 1999). However, they are not present in notable numbers until early to mid-June and have been recorded arriving through mid-July. Alternatively, western populations depart breeding grounds two to three weeks earlier than eastern populations, beginning in late August and continuing typically through mid-September, although individuals have been observed up to November.

Survey Results

This species was not identified during avian habitat assessment surveys conducted in 2008. Suitable habitat was identified during the surveys in San Francisquito, Dry, and South Portal Canyons (POWER 2009). CNDDDB shows two recorded occurrences of this species around the Project area, one from 1893 that is extirpated in San Fernando and one from 1979 in the Santa Clara River (CDFG 2011a).

Distribution and Occurrence in Project Area

The western yellow-billed cuckoo's historical distribution extended from southern Canada to northern Mexico, occupying most of North America (66 FR 38611 38626). The current distribution of breeding western yellow-billed cuckoos within California has a northern limit of the Sacramento Valley. There are no recently recorded sightings of this species within the Project area. Suitable habitat was identified during the 2008 surveys within San Francisquito Canyon and Dry Canyon, but these areas are not known to be occupied. These are ultimately tributaries to the Santa Clara River, where there are historical occurrences of this species. Western yellow-billed cuckoo is expected to have a possibility of occurring within the Project area, in areas of suitable habitat.

6.3 REPTILES

6.3.1 Desert Tortoise

Regulatory Status

Desert tortoise (*Gopherus agassizii*) is federal and State listed as a Threatened species (55 FR 12178 12191, CDFG 2011c).

Critical Habitat

There is no designated critical habitat for the desert tortoise located within the Project area. The nearest critical habitat is located approximately 10 miles northeast of the Barren Ridge Switching Station (59 FR 5820 5866).

Life History and Habitat Requirements

Desert tortoises are known to occur from near sea level to approximately 5,300 feet in elevation (Stebbins 2003). They inhabit desert or semidesert ecosystems, and in the Mojave Desert prefer creosote/burrobush habitat, desert grassland, saltbush scrub, yuccas, shrub-steppe habitat, and Joshua tree woodland (Berry 2008). Tortoises will construct burrows in firm sand, typically at the base of bushes, or else use rocks for shelter or caves in well-developed calcic layers. In some instances, burrows and caves will be used communally or constructed in a group. A typical year consists of hibernation during the winter; feeding, courting, and mating in the spring; feeding and courting in the summer; and mating and hibernation in the fall (Berry 2008, USFWS 2008a). Juveniles are typically active during more of the year than adults, as their smaller mass allows them to respond faster to temperature changes.

Desert tortoises emerge from hibernation and begin the reproductive process in March and April. Nests are often constructed at the opening or just inside of burrows. If conditions are unfavorable for egg-laying, females may carry sperm in the albumen gland in their oviducts for two to three years, and sometimes for as long as 15 years. Eggs are usually laid between May and July in clutches of 1 to 12 eggs. In the Mojave Desert population, tortoises will typically lay two or occasionally three clutches per year, although this is dependent on that year's plant production, which is dependent upon annual rainfall quantities. Eggs take between 70 and 120 days to hatch, during which time they are subject to predation from coyotes and kit foxes (Berry 2008). Once hatched, hatchlings are at the risk of being preyed upon by ravens, coyotes, and other predators. Desert tortoises reach sexual maturity between 12 to 25 years of age, or at around 180 mm (Berry 2008).

Desert tortoises will typically forage on winter and summer annuals, herbaceous perennials, succulents, and grasses, usually found in intershrub spaces, washes, and washlets. Preferred vegetation includes lupines, lotuses, vetches, evening primroses, and other native plants. Newly hatched tortoises will feed upon their yolk plug—emerging from the plastron—for about the first month, after which they will seek out small native plants such as *Camissonia*, *Plantago*, *Euphorbia*, *Lotus*, *Astragalus*, and *Cryptantha* (Berry 2008).

Survey Results

This species and its sign were identified during the desert habitat assessment conducted in 2008. One individual was identified in a burrow located along Segment A. Several other tortoise occurrences—live and dead—have been reported to the CNDDB within the Project's vicinity (CDFG 2011a).

Distribution and Occurrence in Project Area

The Mojave population of the desert tortoise is present north and west of the Colorado River in the Mojave Desert in California, Nevada, Arizona, and southwestern Utah. They are also present in the Sonoran Desert in California (USFWS 2008a). Desert tortoises and their sign have been observed in the Mojave Desert within the upper limits of the Project area during field surveys conducted in 2008 (POWER 2010).

6.4 AMPHIBIANS

6.4.1 California Red-legged Frog

Regulatory Status

The California red-legged frog (*Rana draytonii*) is a federal Threatened species and a California Department of Fish and Game Species of Special Concern (CDFG 2011c). It was listed as Threatened by USFWS in 1996 (61 FR 25813 25833).

Critical Habitat

Designated critical habitat for the California red-legged frog is located within San Francisquito Canyon in an area known as Unit LOS-1 (75 FR 12815 12959). The Project does not cross this area and the access road going through the area, Forest Road 5N27, will not be used during construction. The boundaries of Unit LOS-1 extend to within 0.20 mile from the proposed new 230 kV centerline.

Life History and Habitat Requirements

California red-legged frogs may depend on multiple habitat types over the course of a single year or may be confined to one distinct area. In general, their breeding habitat is characterized by deep, still, or slow-moving water, usually permanent, that typically has dense emergent vegetation, although this is not a requirement (USFWS 2002b, Stebbins 2003). While ponds are used most often for breeding habitat, ponded areas of streams, marshes, lagoons, reservoirs, and other still or slow-moving water bodies may also be used (USFWS 2002b, Stebbins 2003, Elliott et al. 2009, Amphibiaweb 2011). Water is usually around two feet in depth to be appropriate for breeding, but tadpoles have been observed in water that was less than one foot deep. Associated vegetation commonly includes cattails (*Typha* sp.), rushes (*Scirpus* sp.), or willows (Jennings and Hayes 1994, Stebbins 2003, Amphibiaweb 2011).

California red-legged frogs breed approximately between November and April, often for a period of only one to two weeks (USFWS 2002b, Stebbins 2003, Elliott et al. 2009). Calling sites may be in different locations than breeding sites, where eggs will be laid in large clusters (3 to 12 inches in diameter) of up to 6,000 eggs (Stebbins 2003). These eggs masses will typically be attached to surrounding emergent vegetation, but will still float on the water's surface (USFWS 2002b, Amphibiaweb 2011). California red-legged frogs typically lay eggs in March, with eggs hatching within 6 to 14 days depending on temperature, and tadpoles developing into frogs in another 11 to 20 weeks (Jennings and Hayes 1994, USFWS 2002b). Some tadpoles may overwinter, however, and take two breeding seasons to fully develop into frogs (USFWS 2002b, Fellers et al. 2001, Amphibiaweb 2011). Water salinity must be less than 4.5% for eggs and tadpoles to survive (Jennings and Hayes 1994). Juvenile California red-legged frogs are active both diurnally and nocturnally, while adult frogs are mostly nocturnal. Research has suggested that

individuals in coastal populations may remain perennially active, whereas those in inland populations may become dormant during low temperature extremes.

During particularly wet seasons, California red-legged frogs have been known to migrate up to two miles from breeding sites, temporarily residing in other parts of a stream or in upland habitat. Research has shown that, when migrating, individuals apparently do not consider vegetation or topography to be limiting factors in their migration routes and will consequently typically migrate more or less in straight lines rather than remaining confined to riparian corridors (Bulger et al. 2003, Rathbun and Scott 2010). California red-legged frogs may inhabit various habitat types during dry periods when water may not be available. These can include spaces under rocks or logs, areas within industrial debris, agricultural areas, or deep cracks within dried ponds, as long as the area is able to remain cool and moist until the frog can migrate back to pond habitat (USFWS 2002b, Amphibiaweb 2011). These areas are typically much closer to potential water sources.

Survey Results

This species was not identified during surveys conducted within the Project area in 2008 and 2009. However, it is known to be present in what is known as the (St. Francis) “Dam Reach” of San Francisquito Creek and has been identified in San Francisquito Creek by USGS every year, inclusive from 2001 to 2010, with the exception of 2006 (USGS 2002, USGS 2003, USGS 2004, USGS 2005a, USGS 2005b, USGS 2007, USGS 2008, USGS 2010, USGS 2011). Suitable habitat was identified at several locations within the ROW.

Distribution and Occurrence in Project Area

California red-legged frog is believed to have been historically present throughout 46 counties in California, but is now extirpated from approximately half of those, including most of its historic Southern California range (USFWS 2002b). Additionally, there are areas within the proposed transmission line corridor which contain suitable habitat for this species. However, while LOS-1 is occupied by a breeding population of California red-legged frogs, the steep slopes separating LOS-1 from the proposed transmission line ROW are expected to make migration more difficult between the areas, but not completely impossible due to the various drainages and tributaries which connect them. California red-legged frog is expected to have a possibility of occurring within the Project area.

6.4.2 Arroyo Toad

Regulatory Status

The arroyo toad (*Anaxyrus californicus*) is a federal Endangered species and a California Department of Fish and Game Species of Special Concern (CDFG 2011c). It was listed by USFWS in 1994 (59 FR 64859 64867). The arroyo toad was considered a sub-species of the southwestern toad (*Bufo microscaphus*), but more recently it has been elevated taxonomically to the status of species with a different scientific name (*Bufo californicus*; Gergus 1998). It has recently been named into the genus *Anaxyrus* (Frost et al. 2008).

Critical Habitat

The Project would not fall within designated critical habitat for arroyo toad. Critical habitat was finalized in February 2011 in Castaic Creek, but not within the Project area (76 FR 7245 7467).

Life History and Habitat Requirements

The arroyo toad has the most restricted habitat requirements of any anuran species in California (Stebbins 2003). It breeds in stream channels with broad open sandy areas, and burrows in sandy or loamy soils on adjacent terraces (USFWS 1999, Stebbins 2003). Arroyo toad breeding sites do not have a closed canopy

of vegetation, and tend to be associated with banks of willow (*Salix* sp.) and mulefat scrub (Ramirez 2007). Water in breeding sites is slow-flowing and shallow, generally in the main stream channel or nearby channels. Breeding sites are typically bare and frequently have sandy terraces located along the stream edge.

While northern populations of arroyo toads have been observed to begin breeding around March, southern populations may begin breeding as early as January (USFWS 1999). At higher elevations (up to 4,000 feet), arroyo toads have been observed to breed during May and June (Ramirez 2007). Males will typically call from one to two meters from the shoreline of pooled water, two to four centimeters deep, and wait for the female to approach (AmphibiaWeb 2011). Eggs are deposited in two simultaneous strands at the calling site in water typically around nine centimeters deep with insubstantial current and minimal vegetation. One study found the average clutch size to contain 4,714 eggs, which subsequently requires four to six days to hatch in water with a temperature of 12 to 16 degrees Celsius. It will typically take another 65 days at minimum for larvae to metamorphose. They will remain near their natal pool for three to five weeks until the area begins to dry up and/or they reach an adequate size, typically around 30 mm snout-vent length.

When not breeding, the arroyo toad disperses into upland habitat, especially in coastal areas. Based on limited information from a pit fall study at Camp Pendleton, arroyo toads have been observed to move up to about one kilometer from breeding sites into upland habitats (Holland and Sisk 2001). However, radio-telemetry studies show them generally moving shorter distances, up to several hundred meters away from stream channels (Ramirez 2007). Activity is highest in late winter and early spring, following the rainy season.

Arroyo toad upland habitat is characterized by coastal sage scrub, chaparral, grassland, or oak woodland (USFWS 1999). In upland areas (such as those of the Project), during the non-breeding season, the arroyo toad often burrows and aestivates directly within the stream channel (Ramirez 2007). This burrowing in the stream channel is probably due to the dry habitat of the upland areas, and the species' need for some soil moisture during aestivation.

Survey Results

This species was not identified during surveys conducted within the Project area in 2008, 2009, and 2010. However, it is known to be present in a breeding metapopulation within Castaic Creek, which is located downslope from the terminus of the new 230 kV circuit, on the opposite end of Castaic Power Plant. Arroyo toads were identified at this location during a June 2008 field training session, which included diurnal and nocturnal surveys. Suitable habitat was identified within the ROW in several locations.

Distribution and Occurrence in Project Area

The arroyo toad's range extends from the Salinas River Basin in Monterey and San Luis Obispo Counties to Arroyo San Simón in northern Baja California. It occurs in semi-arid regions near washes or intermittent streams, including valley foothill and desert riparian wash. Its microhabitat is in riparian habitat of surface water with sandy banks, willows, cottonwoods, and sycamores, or loose, gravelly areas of streams in the drier parts of its range. Arroyo toads are known to be present in a breeding population within Castaic Creek, north of the Castaic Power Plant. However, the proposed upgrade of the existing line would not impact the Castaic Creek population, as the existing line is south of the Castaic Power Plant (See Figure 1). They are not known to be present within or around the area encompassing the proposed new 230 kV circuit transmission line, although some potential habitat is present along the portion of the route that would cross the ANF on the Proposed Action. Although this species is not known to reside in this area outside of Castaic Creek, it has the potential to occur along the Proposed Action based on availability of suitable habitat.

6.5 FISH

6.5.1 Unarmored Threespine Stickleback

Regulatory Status

The unarmored threespine stickleback (*Gasterosteus aculeatus williamsoni*) was federally listed as endangered in 1970 (35 FR 16047) primarily due to competition with or predation by non-native fish, loss of habitat through urbanization and channelization, and introgression with other subspecies of unarmored threespine sticklebacks. The recovery plan for the unarmored threespine stickleback (USFWS 1985) provides additional information on the biology of the species, reasons for its decline, areas of essential habitat, and the actions needed for recovery of the species. The unarmored threespine stickleback is a fully protected species under California law (California Fish and Game Code, Section 5515 (b) (9)).

Critical Habitat

There is no designated critical habitat for the unarmored threespine stickleback. Critical habitat was proposed in 1970 within San Francisquito Canyon but was never finalized (45 FR 76012 76015).

Life History and Habitat Requirements

Unarmored threespine stickleback is not a strong swimmer and prefers quiet water, such as pools with abundant aquatic vegetation, backwaters, and stream channel margins where water velocity is low (Moyle et al. 1995). They are found in low-gradient streams with moderate- to low-flow rates, although the streams can experience flashy, high-flow events (Baskin 1974). They prefer water temperatures cooler than 75° F (24° C). Threespine sticklebacks are visual feeders and require clear water to facilitate feeding on benthic organisms or those that live on aquatic plants; they cannot maintain populations in turbid waters (Moyle 2002).

Specific environmental conditions that contribute to high-quality habitat for unarmored threespine stickleback include abundant pools that are twice the average stream depth and width, sand and loam substrate with small gravel, embankments rich in vegetation, moderate density of aquatic algae, and moving water with a velocity less than 0.33 feet/second (0.1 meter/second). Important habitat components include: (1) sufficient depth or flow of water to prevent anoxic conditions in late summer; (2) aquatic vegetation for protection and to provide nesting material for males; and (3) small invertebrates to provide forage (Malcolm 1992).

Unarmored three-spine sticklebacks reproduce throughout the year with a minimum of breeding activity occurring from October to January. Reproduction occurs in areas with adequate aquatic vegetation and gentle flow of water where males establish and vigorously defend territories. Unarmored threespine sticklebacks are believed to live for only one year (USFWS 1985). Schooling behavior improves feeding efficiency and is common among sticklebacks, except when breeding (Moyle 2002).

Survey Results

This species was observed in San Francisquito Creek in 2001 (USGS 2002), 2002 (USGS 2003), 2003 (USGS 2004), 2004 (USGS 2005a), and 2005 (USGS 2005b) by USGS. It is believed that this population has since been extirpated in San Francisquito Canyon following the Copper Fire in 2002 and heavy flooding in 2005 (75 FR 28636 28642, CDFG 2011a).

Distribution and Occurrence in Project Area

The unarmored threespine stickleback (UTS) is believed to currently be distributed within the upper Santa Clara River and its tributaries in Los Angeles County, San Antonio Creek on Vandenberg Air Force Base in Santa Barbara County, and around Shay Creek in San Bernardino County (75 FR 28636 28642).

In 2001, the U.S. Geological Survey (USGS) began conducting UTS surveys in two stretches of San Francisquito Creek referred to as the "Dam Reach" and the "Drinkwater Reach." The Dam reach begins at the foundation of the broken Saint Francis dam and extends downstream for approximately 500 meters. The Drinkwater reach begins at the outfall of the Drinkwater reservoir where it enters San Francisquito Canyon and can extend downstream from as little as 130 meters to approximately 2 kilometers depending on outfall rates from the reservoir and current weather conditions. USGS also identified an additional wetted portion within San Francisquito Canyon that did not contain UTS but did possess appropriate habitat began near the LADWP Power Plant 1 in Clearwater Canyon and extended for one kilometer up and downstream from the confluence with Clearwater. In 2001, 2002, 2003, 2004, and 2005, USGS monitored and observed this species in the creek at the old St. Francis Dam reservoir, referred to as the Dam Reach. It is believed that this population has since been extirpated in San Francisquito Canyon following the Copper Fire in 2002 and heavy flooding in 2005 (75 FR 28636 28642, CDFG 2010b). The UTS is not expected to occur within the Project area.

7.0 EFFECTS OF THE PROJECT

In this section, the construction, operation, and maintenance for the construction of the proposed BR RTP are evaluated to determine if federally listed threatened or endangered species within the action area could potentially be affected. Potential effects include temporary disturbance and displacement, loss and fragmentation of habitat, and take of individual animal species. Effects are anticipated to result in both direct and indirect impacts. Direct impacts are those which cause immediate responses such as mortality, habitat loss, and disturbance (resulting in behavioral changes such as flushing and displacement). Indirect impacts are those which cause a protracted response such as increased foraging time or increased roost tree searching due to habitat reduction and/or habitat degradation. Potential effects to Critical Habitat for coastal California gnatcatcher, arroyo toad and California red-legged frog were analyzed to determine if the Project would be likely to destroy or adversely modify Critical Habitat. Impacts to threatened and endangered plants and wildlife species are defined as significant (CFR 17.3) if the following criteria are met:

- Jeopardizing the continued existence of a federally listed species.
- Loss of individuals of a population of species that would result in upgrading a species federally listed as Threatened to Endangered.
- Adversely modifying critical habitat to the degree it would no longer support the species for which it was designated.
- Violation of any federal or other applicable statutes and regulations pertaining to special-status species.
- Adverse impacts to habitat used by special-status species for spawning or rearing and mussel species for attachment to bottom substrates.

7.1 EFFECTS ANALYSIS

7.1.1 Plants

Botanical Species

New 230 kV Transmission Line – Construction of the proposed new 230 kV transmission line could potentially directly affect federally listed botanical species that could occur within the transmission line corridor, including Braunton's milk-vetch, Nevin's barberry, San Fernando Valley spineflower, and slender-horned spineflower. Thread-leaved brodiaea, California orcutt grass, and spreading navarretia are not expected to be present within the Project area due to lack of suitable habitat. Direct impacts which could occur include habitat loss or loss of individual plants. Project construction may remove habitat which is suitable to support one or more of these species. Additionally, individual plants may be removed

during excavation or ground-disturbing activities, or lost due to foot or vehicular traffic. Ground disturbance may also have impacts on the seed bank, reducing the amount of native seeds or increasing the amount of non-native seeds if soil is carried between sites by vehicle tires or carriages. The impacts listed above could be localized and temporary or more permanent if habitat is greatly altered and seed sources are removed. However, preconstruction surveys, timing limitations, and avoidance mitigation will be implemented to reduce impacts to botanical species.

Many of the potential indirect effects can be categorized as habitat degradation, which could occur through proliferation of non-native plant species, spread of dust onto vegetation within or adjacent to work areas, and soil compaction, all of which may affect the ability of native plants to survive or occur within affected areas. Non-native weed seeds may attach to vehicle tires, undercarriages, or elsewhere and can be quickly and easily transported between work areas, where they may fall onto disturbed ground and potentially out-compete native species if they become established. Because of this ease of transportation, roadsides are often easy for invasive plants to spread into, which also increases the likelihood of seeds becoming attached to passing vehicles and being transported elsewhere. Construction can also result in the generation of dust due to ground disturbance, excavation, or even vehicular traffic. Dust that settles onto adjacent vegetation may reduce a plant's vigor by affecting its photosynthetic effectiveness. Trampling due to foot or vehicular traffic could result in soil compaction if it occurs repeatedly within any specific area; soil compaction may in turn lead to reduced water absorption and increased runoff, potentially contributing to an increase in non-native plant species, which could be more tolerant of these conditions.

Reconductoring – The proposed upgrade of the existing BR-RIN would involve approximately 13 miles of NFS lands and four miles of BLM-managed public lands. Reconductoring would occur along Segments A, B, G, and K. Segments A, B, and G (proposed route for the Proposed Action's new 230 kV transmission line) are analyzed in detail above for botanical species impacts in the preceding section. The reconductoring component would continue south beyond the terminus of the new 230 kV transmission line at the proposed Haskell Canyon Switching Station, along the alignment designated as Segment K, which is analyzed below.

Because the Segment K ROW is entirely adjacent to private lands, botanical surveys could not be conducted on it and therefore not all special-status plants may have been documented or observed, or there may be additional plants that have established by the time construction begins. Preconstruction surveys should locate most of these plants so that they can be avoided, but in the event that a plant goes unseen or if construction occurs during a time when plants are not flowering and are not distinguishable, destruction of the plant by grading or excavation is a possibility. Trampling by ground crews would likely not kill any plants, but may partially destroy their above-ground biomass. Clearing and grading associated with construction on towers or the grading of access or spur roads may also result in the alteration of soil conditions, including the loss of native seed banks and changes to the topography and drainage of a site such that the capability of the habitat to support special-status species is impaired. Indirect effects include spread of non-native plant species, soil compaction, and increased dust deposition as previously discussed above. There is potential for construction activities to introduce noxious or invasive plant species to the existing habitats. Vehicles moved from one construction site to the next sometimes introduce non-native or invasive plants by transporting seeds that may be clinging to vehicle structures or that have been incorporated into soil adhering to the vehicle. In addition, the potential for establishment of invasive plants can be increased when construction vehicles alter the structure of existing soils through compaction, which alters the ability of native plants to compete with introduced plant species. The risk of introducing invasive plants can be reduced by thoroughly cleaning construction vehicles (or maintenance) before moving to a new site and minimizing the area affected by vehicular traffic. Construction on steep hillsides may also result in off-site sediment transport that may bury rare plants in adjacent habitat or alter soil conditions.

New 230 kV Circuit – During the 2008, 2009 and 2010 botanical surveys, no threatened, endangered, or candidate species were observed along the proposed new 230 kV circuit Project component. However, botanical surveys were not completed on much of this alignment, as it was covered in dense chaparral.. Preconstruction surveys should locate most of these plants so that they can be avoided, but in the event that a plant goes unseen or if construction occurs during a time when plants are not flowering and are not distinguishable, destruction of the plant by grading or excavation is a possibility.

Potential direct effects include vegetation loss and partial or complete destruction of special-status plant species that may be present within the ROW. Trampling by ground crews could kill plants, but is probably more likely to partially destroy their above-ground biomass. Indirect effects include spread of non-native plant species, soil compaction, and increased dust deposition.

Barren Ridge Switching Station Expansion – Proposed substation upgrades would require an additional 235 feet by 500 feet (2.7 acres). The Barren Ridge Switching Station is not within potential habitat for the botanical species listed above, nor are there any documented occurrences within the confines of the switching station. A habitat assessment was conducted in 2008 that documented the current vegetation community (POWER 2010). The Barren Ridge Switching Station would result in no effect to botanical species.

New Haskell Canyon Switching Station – Construction of Haskell Canyon Switching Station could potentially directly affect federally listed botanical species which could occur within the proposed Haskell Canyon Switching Station footprint, including Braunton's milk-vetch, Nevin's barberry, San Fernando Valley spineflower, and slender-horned spineflower. Based on the habitat assessment and protocol surveys conducted in 2008, 2009 and 2010, thread-leaved brodiaea, California orcutt grass, and spreading navarretia are not expected to be present within the Project area due to lack of suitable habitat. Direct impacts which could occur include habitat loss or loss of individual plants. Individual plants may be removed during excavation or ground-disturbing activities, or lost due to foot or vehicular traffic. Ground disturbance may also have impacts on the seed bank, reducing the amount of native seeds or increasing the amount of non-native seeds if soil is carried between sites by vehicle tires or carriages. Soil compaction from construction or excessive vehicular passage can result in plants being unable to receive sufficient water and nutrients through the soil to their roots. This could result in a loss of vigor and vitality to any plant that is present within soil that has been compacted. Additionally, soil compaction can result in increased runoff due to decreased water absorption in the soil. During construction, dust deposition from passing vehicles or from construction in dry dirt has the potential to result in decreased plant vigor due to reduced photosynthetic capabilities from a dust layer. These impacts would be localized and temporary. Furthermore, preconstruction surveys, timing limitations, and avoidance mitigation would further reduce impacts to botanical species.

Operation and Maintenance – Operation and maintenance of the proposed transmission lines and switching stations would pose a threat to botanical species. Temporary increased ground disturbance may also have impacts on the seed bank, reducing the amount of native seeds or increasing the amount of non-native seeds if soil is carried between sites by vehicle tires or carriages. Additionally, individual plants may be removed during ground-disturbing activities or lost due to foot or vehicle traffic.

Repeated maintenance activities may have some effect on vegetation type conversions in or around the Project area. It is unlikely that vegetation clearance beneath transmission towers—conducted to reduce wildfire risks—would lead to substantial changes in vegetation types. In many cases, towers are completely bare and devoid of vegetation underneath; in situations where vegetation is permitted to grow underneath, it is typically kept at levels low enough to avoid overgrowth. Any non-native species growing beneath a given tower would be cut down along with any native species that is present. However, tree trimming related to power line safety, in which trees that are at risk of hitting the conductors are trimmed, may lead to some vegetation type conversion. This would occur in situations where canopy trimming is

substantial enough to cause sunlight to hit individual plants that may normally be accustomed to reduced amounts of direct sunlight. Such instances would favor plants—native or non-native—that are more tolerant of sunlight, are more drought tolerant, or have been stunted by a relative lack of exposure due to previous high canopy cover. This may lead to vegetation type conversions in particular areas along the ROW; however, unless plants are highly competitive, this is unlikely to adversely affect areas outside of the ROW.

Transmission line ROWs may further lead to the propagation of non-native weed species or to illegal recreation activities. Because ROWs are often dirt roads either bordered by vegetation or with vegetation growing directly on them, it is very easy for vehicles to pick up seeds—native or non-native—and carry them outside of the local area and farther along the ROW or to other areas outside of the ROW. This happens when seeds become attached to vehicle tires, undercarriages, or elsewhere and subsequently are carried out of the area. Additionally, ground disturbance related to maintenance activities may remove native species from a particular area and make it easier for non-natives to grow and establish afterward. This is also a problem following wildfires; while some native species will grow in greater abundance following fires, reduced competition may also increase the opportunities for non-native species to establish and propagate. Similar effects would be expected from the use of illegal OHVs along ROWs or other trails or open areas adjacent to ROWs. Because ROWs are usually maintained to be drivable at least for high-clearance vehicles, they are often attractive routes for OHVs and motorbikes, which can gain access onto them and potentially increase the risk of damage to the surrounding habitat.

Herbicide Application – While herbicides are expected to be used for restoration in certain locations following BRRTP’s construction, particular herbicides to be used are not currently known. Herbicide application will depend on the species of plants present and the presence of any adjacent sensitive areas (e.g., streambeds) and could potentially change depending on particular parts of the Project and possibly particular plants to be treated. For a more in-depth discussion of potential non-native plant treatment by herbicide, please refer to the BRRTP Weed Risk Assessment (POWER 2011).

Restoration Activities (e.g., seed collection, weed removal) – Restoration activities may inadvertently lead to negative effects on listed species such as those described in this document. For instance, seed collection from native plants may result in the unintentional trampling of smaller listed species should they be present in the area, or in the inadvertent removal or destruction of their seeds. Weed removal activities may lead to species being treated or removed that are not non-native. However, it is unlikely that listed species, as well as native plants in general, will be present in areas of heavy non-native plant cover and may instead be present in areas of predominantly native or mixed native/non-native plant composition. In addition, weeding and seed collection efforts may lead to the unintentional transportation of non-native seed on clothing or weeding materials to areas occupied by listed plants, potentially creating a new weed infestation. In order to minimize the negative impacts of these restoration activities mitigation measures such as effective preconstruction flagging of sensitive species, required training for field personnel to be familiar with identifying non-native species and/or species that are to be avoided, and washing seeds off of all equipment prior to entering new areas would assist in reducing the likelihood of incidental effects during seed collection or weed removal.

Summary – Out of the seven federally listed botanical species that could occur within the Project area, only four—Braunton’s milk-vetch, Nevin’s barberry, San Fernando Valley spineflower, and slender-horned spineflower—are expected to have a potential to occur. Thread-leaved brodiaea, California orcutt grass, and spreading navarretia are expected to be absent. Project construction is expected to result in habitat loss and degradation for all of these species if they are found within the Project area, although direct mortality or effects to individual plants would be dependent on their presence within work areas and their successful avoidance due to preconstruction surveys and flagging. General practices that would reduce short-term or long-term effects to special-status plant species or their habitat include GP-24, GP-25, GP-33, GP-35, GP-36, GP-41, GP-42, GP-43, GP-44, GP-48, and GP-49. Mitigation measures that

would reduce short-term or long-term effects to special-status plant species or their habitat include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of Existing Water Crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and protection measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-13 (Protect special-status plant species and their habitat).

Mitigation Measures for Effects to Listed Plant Species

AIR-2a Implement construction fugitive dust control plan. This mitigation measure would require LADWP to prepare and implement a Fugitive Dust Emission Control Plan. (Refer to the Mitigation Planning Section of the EIS/EIR [USFS/BLM/LADWP 2011b] for the full text of this mitigation measure)

HYD-1 Use of Existing Water Crossings. This mitigation measure would require the Project to use existing access routes as available; to construct new roads by mowing or crushing vegetation to no less than four inches above grade; to keep new roads to a 12-foot maximum width; to use existing crossings at perennial streams, wetlands, and irrigation channels as feasible; and to restore new access roads that would not be used for ongoing maintenance. (Refer to the Mitigation Planning Section of the EIS/EIR [USFS/BLM/LADWP 2011b] for the full text of this mitigation measure)

BIO-1 Provide restoration/compensation for impacted sensitive vegetation communities. This mitigation measure would require LADWP to restore disturbed sites to pre-construction conditions or the desired future conditions per the ANF Land Management Plan. (Refer to Table 4 for the full text of this mitigation measure)

BIO-2 Prevent the spread of invasive weeds. This mitigation measure would require LADWP to prepare and implement a weed control plan; remove weed seed sources from construction access routes; remove weed seed sources from assembly yards, tower pads, pull sites, landing zones, and spur roads; and use herbicides where necessary to control exotic weeds. (Refer to Table 4 for the full text of this mitigation measure)

BIO-3 Incorporate riparian area avoidance and mitigation measures. This mitigation measure would require LADWP seek USFS approval prior to any construction or habitat modification within RCAS; prepare an RCA Treatment Plan in consultation with the USFS; avoid impacts to RCAs to the extent feasible; restore all affected RCAs to their pre-construction conditions; and restore or preserve off-site habitat where permanent RCA impacts are unavoidable. (Refer to Table 4 for the full text of this mitigation measure)

BIO-4 Provide restoration/compensation for affected jurisdictional areas. This mitigation measure would require LADWP to avoid impacts to areas under USACE, RWQCB, USFS, or CDFG jurisdiction to the extent feasible and to provide restoration/compensation where applicable. (Refer to Table 4 for the full text of this mitigation measure)

BIO-6 Implement a Worker Environmental Awareness Program. This mitigation measure would require a qualified biologist to conduct Worker Environmental Awareness Program (WEAP) training for all crew members. (Refer to Table 4 for the full text of this mitigation measure)

BIO-13 Protect special-status plant species and their habitat. This mitigation measure would require LADWP to conduct pre-construction surveys for special-status plant species in the Project vicinity; to flag and avoid all identified individuals; and to restore/compensate for all special-status plants impacted by Project construction. (Refer to Table 4 for the full text of this mitigation measure)

Effects Determination

The Proposed Action **may affect, but is not likely to adversely affect** Braunton's milk-vetch, Nevin's barberry, San Fernando Valley spineflower, and slender-horned spineflower.

7.1.2 Birds

California Condor

New 230 kV Transmission Line – This species is expected to be present within the ANF based on GPS data supplied by USFWS (USFWS 2008, USFWS 2009a). Piru Reservoir, which is approximately 13 miles from the new 230 kV transmission line, is a known feeding ground. Although condors are not known to regularly visit any site within the Proposed Action, they do occur over the action area during foraging trips. There are no known condor roost sites that would be affected by the proposed transmission line. Construction for the Project could cause short-term temporary behavioral avoidance of the area due to increased activity, but should not involve overly excessive noises such as blasting. The California condor can be expected to frequent the Project area, particularly as they pass over on the way to feeding ground near Piru Reservoir. The threshold for noise disturbance has not been established for the condor, making effects of noise from the new transmission line (i.e., corona noise) difficult to predict.

The construction of the transmission line would result in an increase of human presence in the Project vicinity. Tower construction and grading of new or existing access roads will result in habitat and vegetation loss. There is a short-term impact that could result from microtrash, which has the possibility to be ingested by condors and which could in turn be regurgitated for chicks to feed on, which can lead to mortality of the chicks (USFS 2008). However, mitigation measures have been designed to develop a Proper Disposal of Construction Waste Plan for the Project, which would address the disposal of microtrash. As stated in mitigation measure BIO-6 (Implement a Worker Environmental Awareness Program), road kill within the construction area would be reported within 24 hours to the USFS or BLM if on USFS or BLM land, respectively, or to the local animal control center if on non-federal lands. The additional traffic and human presence from Project construction is not expected to adversely affect condors due to its localized nature relative to the expansive foraging range of condors—over 140 miles for immature and typically 31 – 44 miles for nesting pairs in a single day (USFWS 1996)—combined with the general lack of occurrence data in the vicinity of the new 230 kV transmission line. Short-term direct impacts to condors' nests would be limited because no nests have been observed (USFWS 2009a), curtailing the possibility of abandonment from disturbance.

Collision with transmission lines is not a major source of mortality for condors. No critical habitat would be affected for condors, and no direct take would occur. The significance of behavioral avoidance by condors in the long-term (if it occurs) would be considered minor because multiple routes to and from principal feeding grounds of the condor would be maintained.

Reconductoring – Reconductoring would occur along Segments A, B, G, and K (Figure 1). Segments A, B, and G are analyzed in detail for the California condor impacts in the preceding section. The additional potential impacts resulting along Segment K are described below.

Construction of the Project may result in a negligible reduction of available foraging habitat, but because condors may fly over 140 miles away to forage, it is not expected that construction impacts on habitat would substantially affect condor foraging or considerably reduce the amount of foraging habitat available. Most condor activity is concentrated south, southwest, and northwest of the Project area, according to data supplied by USFWS (USFWS 2009a).

New 230 kV Circuit – The California condor is known to occur within this area, and would therefore be vulnerable to short-term impacts such as microtrash, which has the possibility to be ingested by condors and which could in turn be regurgitated for chicks to feed on, which can lead to mortality of the chicks (USFS 2008). These impacts would be localized and temporary. Protection measures such as BIO-18 (Protect California condor) would be developed that would address the disposal of microtrash, including specialized microtrash removal training for workers and daily trash removal. As stated in mitigation measure BIO-6 (Implement a Worker Environmental Awareness Program), roadkill within the

construction area would be reported within 24 hours to the USFS or BLM if on USFS or BLM land, respectively, or to the local animal control center if on non-federal lands. Because there have been more condor records in the vicinity of the new 230 kV circuit, the potential for a condor to occur within this area of the Project during construction may be slightly greater. However, the additional traffic and human presence from Project construction is not expected to adversely affect condors due to its localized nature relative to the expansive foraging range of condors. The new 230 kV circuit would result in no effect to the California condor.

Barren Ridge Switching Station Expansion – Proposed upgrades to the Barren Ridge Switching Station would occur entirely within Mojave Creosote Bush Scrub habitat. No known habitat or occurrences have been documented for the California condor; therefore, no impacts to this species are anticipated from this Project component.

New Haskell Canyon Switching Station – The Haskell Canyon Switching Station would be located less than 0.5 mile from heavily populated residential areas in Santa Clarita, but would occur just outside the boundaries of the ANF and may still be within areas considered to be suitable for foraging by this species. It is estimated that a maximum of 13.7 acres would be permanently lost as a result of the switching station, parking lot, access roads, and other disturbance associated with the construction and operation of this switching station (Table 7). This would reduce potential foraging habitat in this area, but would not likely restrict or dissuade condors from venturing north into the ANF due to the nearby presence of pre-existing development. Preconstruction surveys, timing limitation, and avoidance mitigations such as BIO-7 (Impacts to raptors) and BIO-18 (Protect California condor) would reduce potential impact to the California condor.

Operation and Maintenance – Operation and maintenance of the proposed transmission lines and substations would pose minimal threat to the California condor. Temporary increased human presence, noise, and dust may occur and result in negligible impacts. During emergency operations, temporary disturbance may occur but would be minimized through emergency operation procedures such as briefing crews on sensitive animal procedures and minimized operations in sensitive habitats, as conditions permit.

Summary – Although California condors are expected to be present within the Project area and its vicinity, effects to roosting or nesting habitat will not occur and potential effects to individuals that may be foraging or flying in the area are anticipated to be minimal during construction due to the large foraging range that this species utilizes. While habitat loss and degradation may occur, it is expected to be slight due to these large home ranges (Table 7) and the fact that the entire ANF is considered to be suitable foraging habitat for the California condor (N. Sill personal communication 2011). Avoidance and minimization measures would be enforced during construction to reduce potential impacts to the California condor and its habitat.

TABLE 7. CONSTRUCTION IMPACTS TO POTENTIAL CALIFORNIA CONDOR HABITAT.

	Temporary Impact (Ac.)	Minimum Permanent Impact (Ac.)	Maximum Permanent Impact (Ac.)	Total Impacted Area (Ac.)	Percentage of Total ANF (662,983 acres)
New 230 kV T-line	140.15	25.14	37.98	203.27	0.03%
Reconductoring	85.83	20.22	36.31	142.36	0.02%
New 230 kV Circuit	99.80	19.04	30.05	148.89	0.02%
Haskell Canyon Switching Station	-	-	13.67	13.67	< 0.01%
Total Impacts	325.78	64.4	118.01	508.19	< 0.08%

General practices that would reduce short-term or long-term effects to California condor include GP-8, GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to California condor include HYD-1 (Use of Existing Water Crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-7 (Impacts to raptors), BIO-11 (Reduce avian collisions with and electrocutions on transmission lines), and BIO-18 (Protect California condor). Formal consultation is being conducted with the USFWS to determine if any additional protection measures other than those mentioned above are necessary to protect California condors.

Mitigation Measures for Impacts to California Condor

- HYD-1 Use of Existing Water Crossings** This mitigation measure would require the Project to use existing access routes as available; to construct new roads by mowing or crushing vegetation to no less than four inches above grade; to keep new roads to a 12-foot maximum width; to use existing crossings at perennial streams, wetlands, and irrigation channels as feasible; and to restore new access roads that would not be used for ongoing maintenance. (Refer to the Mitigation Planning Section of the EIS/EIR [USFS/BLM/LADWP 2011b] for the full text of this mitigation measure)
- BIO-2 Prevent the spread of invasive weeds.** This mitigation measure would require LADWP to prepare and implement a weed control plan; remove weed seed sources from construction access routes; remove weed seed sources from assembly yards, tower pads, pull sites, landing zones, and spur roads; and use herbicides where necessary to control exotic weeds. (Refer to Table 4 for the full text of this mitigation measure)
- BIO-5 Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife.** This mitigation measure would require LADWP to conduct preconstruction surveys for special-status species, provide a biological monitor where special-status sign or suitable habitat is identified, and to cover all open trenches or excavations to prevent entrapment of wildlife. (Refer to Table 4 for the full text of this mitigation measure)
- BIO-6 Implement a Worker Environmental Awareness Program.** This mitigation measure would require a qualified biologist to conduct Worker Environmental Awareness Program (WEAP) training for all crew members. (Refer to Table 4 for the full text of this mitigation measure)
- BIO-7 Impacts to Raptors.** This mitigation measure would require LADWP to conduct preconstruction surveys for raptor nests in the Project vicinity; avoid active nests during nesting season where possible; and to consult with BLM, CDFG, USFS, and/or USFWS as applicable where active nest avoidance is infeasible or where inactive nests will be removed. (Refer to Table 4 for the full text of this mitigation measure)
- BIO-11 Reduce avian collisions with and electrocutions on transmission lines.** This mitigation measure would require LADWP to implement the latest APLIC guidelines in the design of new Project structures and to develop an Avian Protection Plan for the Project. (Refer to Table 4 for the full text of this mitigation measure)
- BIO-18 Protect California condor.** This mitigation measure would require LADWP to retain a qualified biological monitor during construction; to halt construction during specified hours when condors are identified near construction and consult with USFWS (and USFS if on NFS lands); to dispose of all microtrash; to distribute a California condor education flier to all construction personnel; and to report all condor sightings to USFWS (and USFS if on NFS lands). (Refer to Table 4 for the full text of this mitigation measure)

Effects Determination

The BR RTP construction, operation, and maintenance **may affect, but is not likely to adversely affect**, the California condor.

Coastal California Gnatcatcher

New 230 kV Transmission Line – The proposed new 230 kV line would cross a small amount of suitable habitat for the California gnatcatcher; however, it would not cross designated critical habitat. Construction-related impacts could include increased noise, traffic, or other human activities that would potentially disturb individual coastal California gnatcatchers that are foraging or passing through the Project area. These impacts would be localized and temporary. Minor clearing of vegetation (suitable habitat) would occur as a result of construction. Preconstruction surveys, timing limitations, and avoidance mitigations would further reduce potential impacts to coastal California gnatcatchers occurring in the area.

Potential indirect effects to coastal California gnatcatchers from Project construction could include increased vulnerability to predation for individuals that move outside of their specific habitat patches during construction, possible inability to effectively forage due to construction-related stress or unfamiliarity with a new area, and habitat degradation resulting from the spread and establishment of non-native species or the deposition of dust onto surrounding vegetation as a result of vehicles or reestablishment of access roads if necessary. Human presence following construction is not expected to noticeably increase, as construction in these areas would all be conducted on existing transmission line towers.

Reconductoring – Reconductoring would occur along Segments A, B, G, and K. Segments A, B, and G are analyzed in detail for coastal California gnatcatcher impacts in the preceding section. The additional potential impacts resulting along Segment K are described below.

Designated critical habitat for the coastal California gnatcatcher is located within Segment K, a section of the existing transmission line that will be reconducted (72 FR 72009 72213). Approximately 2.9 miles of Segment K are within this patch of designated critical habitat, known as coastal California gnatcatcher critical habitat Unit 13. Should access roads need to be reestablished, they would need to be graded and cleared as necessary for construction access. This could potentially result in loss or alteration of designated critical habitat Unit 13 (72 FR 72009 72213). No disturbance is expected outside of the existing ROW, so any habitat that may need to be cleared for construction would be inside the ROW. However, the habitat is somewhat disturbed in this area due to general transmission maintenance activities such as tower access or brush-related fire prevention. Some towers may need to be modified or replaced either above- or below-ground to accommodate a new, heavier conductor. This would potentially require ground disturbance at these locations, which could result in possible habitat removal or disturbance to individual birds, which may temporarily leave the area because of construction activities. At least one coastal California gnatcatcher was observed in the winter of 2009/2010 in the Project area south of Unit 13, and this species is expected to be present along this portion of the Project. Further habitat degradation may occur through the deposition of dust or other contaminants onto leaves, which can reduce their vigor and reduce habitat quality in the area. Dust control measures would be implemented to help reduce this impact. Individuals in the area may be driven to dispersal by human presence and/or construction noise. If this occurs, it may lead to indirect injury or mortality if individuals are forced to relocate to an unfamiliar area, which may leave them open to predation. In addition, construction noise and impacts may result in displacement of individuals into less suitable habitat, which could lead to reduced fitness of individuals. Therefore, seasonal restrictions outside of the breeding season would be enforced; if these cannot be complied with, LADWP will be required to conduct preconstruction surveys for coastal California gnatcatchers in the Project area and utilize a biological monitor as necessary. Because nesting may occur outside of the officially-recognized nesting season, if construction approaches any undetected nests with eggs or young, the disturbance may cause the adult(s) to abandon the nest.

New 230 kV Circuit – There may be direct or indirect construction impacts to coastal California gnatcatcher, expected to be present due to sightings around Castaic Lake during 2010 and 2011 bird use

count surveys, one recorded sighting within 1.3 miles of the proposed ROW, and suitable coastal California gnatcatcher habitat identified during 2008 surveys (POWER 2010). Because of the locations of these habitat patches identified in 2008 and those where individuals were located in 2010 and 2011, it is possible that they could be destroyed or degraded by construction, as they are directly within the corridor. Other construction-related impacts include increased noise, traffic, or other human activities that would potentially disturb individual coastal California gnatcatchers that are foraging or passing through the Project area. These impacts would be localized and temporary. Potential indirect effects to coastal California gnatcatchers from Project construction could include increased vulnerability to predation for individuals that move outside of their specific habitat patches during construction, possible inability to effectively forage due to construction-related stress or unfamiliarity with a new area, and habitat degradation resulting from the spread and establishment of non-native species or the deposition of dust onto surrounding vegetation as a result of vehicles or reestablishment of access roads if necessary. Preconstruction surveys would be conducted to determine usage of these areas by coastal California gnatcatchers, and biological monitoring during construction would follow should coastal California gnatcatchers be identified in the Project area.

Barren Ridge Switching Station Expansion – The Barren Ridge Switching Station does not occur within coastal California gnatcatcher habitat.

New Haskell Canyon Switching Station – The proposed switching station footprint is not within the vicinity of suitable coastal California gnatcatcher habitat, nor are there any documented occurrences. Preconstruction surveys and avoidance mitigations would further reduce potential impacts to the coastal California gnatcatchers occurring in the area.

Operation and Maintenance – Operation and maintenance of the proposed transmission lines and substations could result in impacts to coastal California gnatcatcher. Operation and maintenance activities will occur for 50 years. Temporary increased human presence, noise, and dust may occur and result in negligible impacts. During emergency operations, temporary disturbance may occur but would be minimized through emergency operation procedures such as briefing crews on sensitive animal procedures and minimized operations in sensitive habitats, as conditions permit. Operation and maintenance of the BRRTP would likely cause minimal impacts to the species, as ongoing maintenance is currently being conducted along Segment K and the incremental increase in operation and maintenance activities for this Project would not substantially change from the current condition, and the reconductoring component within the existing ROW would cause short-term temporary impacts.

Summary – Both direct and indirect effects to the coastal California gnatcatcher may occur as a result of this Project and its construction. This species is known to be present on the southern end of the Project area in the reconductoring area known as Segment K. Individuals may be directly impacted by displacement, as well as loss or degradation of suitable habitat. Breeding is not expected to be affected, as construction would occur outside of the breeding season. Avoidance and minimization measures would be enforced during construction to avoid direct impacts to the coastal California gnatcatcher and its habitat.

Coastal California gnatcatcher critical habitat Unit 13 may be affected by Project construction. Because this area would be reconductored, specific impacts cannot be precisely estimated because they may change at each tower, depending on existing tower conditions and suitability of existing access roads. This would be determined after the tower inspection/engineering design phase of the Project. Using the same impact model as the construction of the new 230 kV transmission line, projected impacts from reconductoring in Unit 13 are as follows:

TABLE 8. IMPACTS TO COASTAL CALIFORNIA GNATCATCHER DESIGNATED CRITICAL HABITAT UNIT 13.

	Total Acreage of Habitat within Segment (Ac.)	Temporary Disturbance (Ac.)	Minimum Permanent Disturbance (Ac.)	Maximum Permanent Disturbance (Ac.)
Coastal California Gnatcatcher Designated Critical Habitat Unit 13	174.9	18.76	4.79	8.92

General practices that would reduce short-term or long-term effects to coastal California gnatcatcher include GP-8, GP-24, GP-33, GP-34, GP-35, GP-41, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term and long-term effects to coastal California gnatcatcher include HYD-1 (Use of Existing Water Crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-8 (Avoid nesting season and limit disturbance of nesting birds [non-raptor species]), BIO-11 (Reduce avian collisions with and electrocutions on transmission lines), and BIO-15 (Protect coastal California gnatcatcher and its habitat).

Mitigation Measures for Effects to Coastal California Gnatcatcher

HYD-1 Use of Existing Water Crossings. This mitigation measure would require the Project to use existing access routes as available; to construct new roads by mowing or crushing vegetation to no less than four inches above grade; to keep new roads to a 12-foot maximum width; to use existing crossings at perennial streams, wetlands, and irrigation channels as feasible; and to restore new access roads that would not be used for ongoing maintenance. (Refer to the Mitigation Planning Section of the EIS/EIR [USFS/BLM/LADWP 2011b] for the full text of this mitigation measure)

BIO-1 Provide restoration/compensation for impacted sensitive vegetation communities. This mitigation measure would require LADWP to restore disturbed sites to pre-construction conditions or the desired future conditions per the ANF Land Management Plan. (Refer to Table 4 for the full text of this mitigation measure)

BIO-2 Prevent the spread of invasive weeds. This mitigation measure would require LADWP to prepare and implement a weed control plan; remove weed seed sources from construction access routes; remove weed seed sources from assembly yards, tower pads, pull sites, landing zones, and spur roads; and use herbicides where necessary to control exotic weeds. (Refer to Table 4 for the full text of this mitigation measure)

BIO-4 Provide restoration/compensation for affected jurisdictional areas. This mitigation measure would require LADWP to avoid impacts to areas under USACE, RWQCB, USFS, or CDFG jurisdiction to the extent feasible and to provide restoration/compensation where applicable. (Refer to Table 4 for the full text of this mitigation measure)

BIO-5 Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife. This mitigation measure would require LADWP to conduct preconstruction surveys for special-status species, provide a biological monitor where special-status sign or suitable habitat is identified, and to cover all open trenches or excavations to prevent entrapment of wildlife. (Refer to Table 4 for the full text of this mitigation measure)

BIO-6 Implement a Worker Environmental Awareness Program. This mitigation measure would require a qualified biologist to conduct Worker Environmental Awareness Program (WEAP) training for all crew members. (Refer to Table 4 for the full text of this mitigation measure)

BIO-8 Avoid nesting season and limit disturbance of nesting birds (non-raptor species). This mitigation measure would require LADWP to conduct pre-construction surveys for non-raptor

nests in the Project vicinity; avoid active nests during nesting season where possible; and to consult with BLM, CDFG, USFS, and/or USFWS as applicable where active nest avoidance is infeasible or where inactive nests will be removed. (Refer to Table 4 for the full text of this mitigation measure)

BIO-11 Reduce avian collisions with and electrocutions on transmission lines. This mitigation measure would require LADWP to implement the latest APLIC guidelines in the design of new Project structures and to develop an Avian Protection Plan for the Project. (Refer to Table 4 for the full text of this mitigation measure)

BIO-15 Protect coastal California gnatcatcher and its habitat. This mitigation measure would require LADWP to carry out Project construction in suitable habitat for coastal California gnatcatcher outside of its breeding season. If this cannot be done, LADWP would be required to conduct protocol/focused surveys for this species; to avoid all identified territories or nests in consultation with BLM, CDFG, USFS, and/or USFWS as applicable; to reduce noise and disturbance in the vicinity of identified territories or nests; and to provide a qualified biological monitor for construction in occupied habitat. (Refer to Table 4 for the full text of this mitigation measure)

Effects Determination

The BRRTP construction, operation, and maintenance **may affect, but is not likely to adversely affect** the coastal California gnatcatcher, and **may affect, and is likely to adversely affect** designated critical habitat for the coastal California gnatcatcher.

Southwestern Willow Flycatcher

New 230 kV Transmission Line – No known records or surveys identified occurrences the southwestern willow flycatcher within the proposed new 230 kV line (Proposed Action) ROW. Potential habitat does exist along the Proposed Action and, during construction of the Project, direct impacts to the species, including injury, mortality, loss of eggs or young, or excessive stress, could occur due to loss of habitat. Permanent effects, such as habitat loss, could occur due to the installation of permanent structures. The Project would include installation of towers, creation of new access roads, and creation of new work pads adjacent to the towers. Preconstruction surveys, timing limitations, and avoidance mitigations would further reduce potential impacts to southwestern willow flycatchers occurring in the area. The Project area would not fall within designated Critical Habitat for the southwestern willow flycatcher. Therefore, no adverse effects to Critical Habitat would occur as a result of the Project.

Project construction activities may result in increased noise levels, traffic, and human presence, which could in turn result in effects to this species that include displacement, increased vulnerability to predation, decreased fitness, altered behavior, altered foraging, and habitat degradation resulting from the establishment of non-native species. Further habitat degradation may occur through the deposition of dust or other contaminants onto leaves, which can reduce their vigor and reduce habitat quality in the area. Furthermore, because nesting may occur outside of the officially recognized nesting season, if construction approaches any undetected nests with eggs or young, the disturbance may cause the adult(s) to abandon the nest. For this reason, construction will be timed to have the least effect possible on individuals. If this is unavoidable, preconstruction surveys will be conducted within suitable habitat in the Project area, and a biological monitor will remain on-site with construction to reduce human disturbance and noise impacts as possible, as described in BIO-14 (Protect western yellow-billed cuckoo, southwestern willow flycatcher, least Bell's vireo, and their habitat).

Reconductoring – Reconductoring would occur along Segments A, B, G, and K. Segments A, B, and G are analyzed in detail for southwestern willow flycatcher impacts in the preceding section. The only difference from the new 230 kV transmission line with respect to reconductoring is Segment K, and no suitable habitat or known occurrences have been documented along this segment. Therefore, no impacts to this species are anticipated from the construction of this Project component.

New 230 kV Circuit – There is no suitable southwestern willow flycatcher habitat nor have any individuals been documented along this corridor. Therefore, no impacts to this species or its designated critical habitat are anticipated from the construction of this Project component.

Barren Ridge Switching Station Expansion – Proposed upgrades to the Barren Ridge Switching Station would occur entirely within Mojave Creosote Bush Scrub habitat. No known suitable habitat or occurrences have been documented for the southwestern willow flycatcher. Therefore, no impacts to this species or its designated critical habitat are anticipated from the construction of this Project component.

New Haskell Canyon Switching Station – No southwestern willow flycatcher habitat or individuals have been documented within the proposed Haskell Canyon Switching Station footprint. Preconstruction surveys, timing limitations and avoidance mitigations would further reduce potential impacts to southwestern willow flycatcher occurring in the area.

Operation and Maintenance – Operation and maintenance of the proposed transmission lines and substations would pose minimal threat to southwestern willow flycatchers. Temporary increased human presence, noise, and dust may occur and result in negligible impacts. During emergency operations, temporary disturbance may occur but would be minimized through emergency operation procedures such as briefing crews on sensitive animal procedures and minimized operations in sensitive habitats, as conditions permit.

Summary – Southwestern willow flycatchers are not known to be present within the Project area, although willow flycatchers or an indeterminate subspecies have been detected previously. Suitable habitat to support this species is present within the Project area and may be affected by construction activities, resulting in possible habitat loss or degradation depending on final construction sites and access routes. Due to the presence of existing transmission lines throughout the entire Project area and abundant perching opportunities on the individual transmission towers, predation from raptors and perching habitat for raptors is not expected to substantially increase from the addition of one transmission line. Suitable habitat is present in many of these areas that already contain transmission lines. Breeding is not expected to be affected, as construction would occur outside of the breeding season. Avoidance and minimization measures would be enforced during construction to reduce potential impacts to the southwestern willow flycatchers and their habitat.

General practices that would reduce short-term or long-term effects to southwestern willow flycatcher and to riparian habitat include GP-3, GP-5, GP-8, GP-11, GP-12, GP-17, GP-19 GP-35, GP-38, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short-term or long-term effects to southwestern willow flycatcher include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of Existing Water Crossings), HYD-2 (New Road Construction Over Waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-8 (Avoid nesting season and limit disturbance of nesting birds [non-raptor species]), BIO-11 (Reduce avian collisions with and electrocutions on transmission lines), and BIO-14 (Protect western yellow-billed cuckoo, southwestern willow flycatcher, least Bell's vireo, and their habitat).

Mitigation Measures for Impacts to Southwestern Willow Flycatcher

AIR-2a Implement construction fugitive dust control plan. This mitigation measure would require LADWP to prepare and implement a Fugitive Dust Emission Control Plan. (Refer to the

Mitigation Planning Section of the EIS/EIR [USFS/BLM/LADWP 2011b] for the full text of this mitigation measure)

HYD-1 Use of Existing Water Crossings. This mitigation measure would require the Project to use existing access routes as available; to construct new roads by mowing or crushing vegetation to no less than four inches above grade; to keep new roads to a 12-foot maximum width; to use existing crossings at perennial streams, wetlands, and irrigation channels as feasible; and to restore new access roads that would not be used for ongoing maintenance. (Refer to the Mitigation Planning Section of the EIS/EIR [USFS/BLM/LADWP 2011b] for the full text of this mitigation measure)

HYD-2 New Road Construction Over Waterways. This mitigation measure would require roads to be built as near as possible to right angles to streams and washes if feasible; to install culverts where necessary; to minimize disturbance to vegetation and streambeds; to utilize dust control measures during construction; and to leave existing roads in a condition equal to or better than their preconstruction conditions. (Refer to the Mitigation Planning Section of the EIS/EIR [USFS/BLM/LADWP 2011b] for the full text of this mitigation measure)

BIO-1 Provide restoration/compensation for impacted sensitive vegetation communities. This mitigation measure would require LADWP to restore disturbed sites to pre-construction conditions or the desired future conditions per the ANF Land Management Plan. (Refer to Table 4 for the full text of this mitigation measure)

BIO-2 Prevent the spread of invasive weeds. This mitigation measure would require LADWP to prepare and implement a weed control plan; remove weed seed sources from construction access routes; remove weed seed sources from assembly yards, tower pads, pull sites, landing zones, and spur roads; and use herbicides where necessary to control exotic weeds. (Refer to Table 4 for the full text of this mitigation measure)

BIO-3 Incorporate riparian area avoidance and mitigation measures. This mitigation measure would require LADWP seek USFS approval prior to any construction or habitat modification within RCAS; prepare an RCA Treatment Plan in consultation with the USFS; avoid impacts to RCAs to the extent feasible; restore all affected RCAs to their pre-construction conditions; and restore or preserve off-site habitat where permanent RCA impacts are unavoidable. (Refer to Table 4 for the full text of this mitigation measure)

BIO-4 Provide restoration/compensation for affected jurisdictional areas. This mitigation measure would require LADWP to avoid impacts to areas under USACE, RWQCB, USFS, or CDFG jurisdiction to the extent feasible and to provide restoration/compensation where applicable. (Refer to Table 4 for the full text of this mitigation measure)

BIO-5 Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife. This mitigation measure would require LADWP to conduct preconstruction surveys for special-status species, provide a biological monitor where special-status sign or suitable habitat is identified, and to cover all open trenches or excavations to prevent entrapment of wildlife. (Refer to Table 4 for the full text of this mitigation measure)

BIO-6 Implement a Worker Environmental Awareness Program. This mitigation measure would require a qualified biologist to conduct Worker Environmental Awareness Program (WEAP) training for all crew members. (Refer to Table 4 for the full text of this mitigation measure)

BIO-8 Avoid nesting season and limit disturbance of nesting birds (non-raptor species). This mitigation measure would require LADWP to conduct pre-construction surveys for non-raptor nests in the Project vicinity; avoid active nests during nesting season where possible; and to consult with BLM, CDFG, USFS, and/or USFWS as applicable where active nest avoidance is infeasible or where inactive nests will be removed. (Refer to Table 4 for the full text of this mitigation measure)

BIO-11 Reduce avian collisions with and electrocutions on transmission lines. This mitigation measure would require LADWP to implement the latest APLIC guidelines in the design of new Project structures and to develop an Avian Protection Plan for the Project. (Refer to Table 4 for the full text of this mitigation measure)

BIO-14 Protect western yellow-billed cuckoo, southwestern willow flycatcher, least Bell's vireo, and their habitat. This mitigation measure would require LADWP to carry out Project construction in suitable habitat for western yellow-billed cuckoo, southwestern willow flycatcher, and least Bell's vireo outside of their breeding seasons. If this cannot be done, LADWP would be required to conduct protocol/focused surveys for these species; to avoid all identified territories or nests in consultation with BLM, CDFG, USFS, and/or USFWS as applicable; to reduce noise and disturbance in the vicinity of identified territories or nests; and to provide a qualified biological monitor for construction in occupied habitat. (Refer to Table 4 for the full text of this mitigation measure)

Effects Determination

The proposed BR RTP may affect, but is not likely to adversely affect the southwestern willow flycatcher.

Least Bell's Vireo

New 230 kV Transmission Line – No known records or surveys found the least Bell's vireo to be present on the proposed new 230 kV line ROW (Proposed Action). If present in the area during construction, individuals of different life stages may be directly impacted as a result of construction activities. Potential habitat was identified during 2008 surveys in Dry Canyon, and while this habitat may be affected or partially lost due to construction of the new 230 kV transmission line, least Bell's vireos are not known to be present in it (POWER 2010). Breeding of any least Bell's vireos is not expected to be affected by construction, as construction would be conducted outside of the breeding season. Preconstruction surveys, timing limitations, and avoidance mitigations would further reduce potential impacts to least Bell's vireo potentially occurring in the new 230 kV line transmission corridor. The new 230 kV line would not fall within designated Critical Habitat for the least Bell's vireo. Therefore, no adverse effects to Critical Habitat would occur as a result of the new 230 kV line.

Project construction activities may result in increased noise levels, traffic, and human presence, which could result in indirect effects to this species such as displacement, increased vulnerability to predation, decreased fitness, altered behavior, altered foraging, and habitat degradation resulting from the establishment of non-native species. Further habitat degradation may occur through the deposition of dust or other contaminants onto leaves, which can reduce their vigor and reduce habitat quality in the area. Furthermore, because nesting may occur outside of the officially recognized nesting season, if construction approaches any undetected nests with eggs or young, the disturbance may cause the adult(s) to abandon the nest. For this reason, construction will be timed to have the least effect possible on individuals. If this is unavoidable, preconstruction surveys will be conducted within suitable habitat in the Project area, and a biological monitor will remain on-site with construction to reduce human disturbance and noise impacts as possible, as described in BIO-14 (Protect western yellow-billed cuckoo, southwestern willow flycatcher, least Bell's vireo, and their habitat).

Reconductoring – Reconductoring would occur along Segments A, B, G, and K. Segments A, B, and G are analyzed in detail for least Bell's vireo impacts in the preceding section. The only difference from the new 230 kV transmission line with respect to reconductoring is Segment K, and no potential habitat or known occurrence have been documented along this segment; therefore, no impacts to least Bell's vireo are anticipated from this Project component.

New 230 kV Circuit – Least Bell's vireos may be present within the Project area around Castaic Lake and Castaic Lagoon. A population of at least 15 individuals was spotted in this area in 2005 over ten separate visits (CDFG 2010). The location of this population is within 0.5 mile of the new 230 kV circuit. However, the transmission line is approximately 375 feet higher in elevation—and set back from the top of a hill—than the patch of suitable habitat where the vireos were previously identified, which is at the

bottom of a canyon. It is not expected that any vegetation removal in this area would be required, as the corridor is not close enough and the paved road would likely be maintained by the management of the Castaic Lake State Recreation Area, of which this road is a part. There may be small amounts of tree trimming required on the edge of the road if equipment cannot pass without hitting branches. While individual least Bell's vireos may be affected by the noise of passing vehicles if Project equipment enters and exits the ROW via the paved road that passes by the vireo site, further effects to least Bell's vireos or their habitat are not expected in this area due to its topographical features. Because the paved road that passes adjacent to the vireo sighting location is a public road within the Castaic Lake State Recreation Area, birds in the area likely have become acclimated to periodic disturbances from vehicular traffic on this roadway. Should construction vehicles enter and exit the ROW in this area from a different road, of which there are several in the area that could be used if necessary, direct impacts from construction to any vireos which may be present are expected to be negligible. The population of least Bell's vireo in this area was last recorded in 2005; preconstruction surveys would be conducted in this area to determine if this species is still present. Should individuals be detected, appropriate follow-up protocols according to mitigation measure BIO-14 (Protect western yellow-billed cuckoo, southwestern willow flycatcher, least Bell's vireo, and their habitat) would be implemented.

Indirect impacts to least Bell's vireo could occur from the new 230 kV circuit due to habitat degradation. Construction vehicles and equipment could transport non-native plant seeds on their tires or carriages and cause non-native plant species to spread into areas where they may be less abundant or not present, such as within the areas that contain suitable habitat for least Bell's vireo. Construction on towers or grading of existing access roads may also result in dust deposition onto surrounding vegetation, which could affect the ability or effectiveness of plants to photosynthesize. Long-term periodic human presence and use of access roads by maintenance or security vehicles may continue to result in habitat degradation as described above, but the effects would be relatively minor, as most activity would likely consist of passing by while patrolling the ROW, and should not result in off-road activity—such as foot traffic—unless a problem is discovered.

Barren Ridge Switching Station Expansion – Proposed upgrades to the Barren Ridge Switching Station would occur entirely within Mojave Creosote Bush Scrub habitat. No known habitat or occurrences have been documented for the least Bell's vireo; therefore, no impacts are anticipated to occur from this Project component.

New Haskell Canyon Switching Station – No least Bell's vireo habitat or individuals have been documented within the vicinity of the proposed Haskell Canyon Switching Station. Preconstruction surveys, timing limitations, and avoidance mitigations would further reduce potential impacts to least Bell's vireo occurring in the area.

Operation and Maintenance – Operation and maintenance of the proposed transmission lines and substations would pose minimal threat to least Bell's vireo. Temporary increased human presence, noise, and dust may occur and result in negligible impacts. During emergency operations, temporary disturbance may occur but would be minimized through emergency operation procedures such as briefing crews on sensitive animal procedures and minimized operations in sensitive habitats, as conditions permit.

Summary – Least Bell's vireo is known to be present as of 2005 near what is known as Segment J, a section of existing transmission line that would have a new 230 kV circuit placed on it. However, because of the proximity of this known population to public recreation—the Castaic Lake State Recreation Area—and a public road, construction effects are not expected to substantially increase above the daily ambient effects. This species is not known to be present elsewhere within the Project area. Breeding is not expected to be affected, as construction would occur outside of the breeding season. Habitat degradation may occur as a result of construction activities or even after construction during routine maintenance or security patrols. Avoidance and minimization measures would be enforced during construction to protect

least Bell's vireo and its habitat. General practices that would reduce short-term or long-term effects to least Bell's vireo and to riparian habitat include GP-3, GP-5, GP-8, GP-11, GP-12, GP-17, GP-19, GP-35, GP-38, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short-term or long-term effects to least Bell's vireo include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of Existing Water Crossings), HYD-2 (New Road Construction Over Waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-8 (Avoid nesting season and limit disturbance of nesting birds [non-raptor species]), BIO-11 (Reduce avian collisions with and electrocutions on transmission lines), and BIO-14 (Protect western yellow-billed cuckoo, southwestern willow flycatcher, least Bell's vireo, and their habitat).

Mitigation Measures for Impacts to Least Bell's Vireo

- AIR-2a Implement construction fugitive dust control plan.** This mitigation measure would require LADWP to prepare and implement a Fugitive Dust Emission Control Plan. (Refer to the Mitigation Planning Section of the EIS/EIR [USFS/BLM/LADWP 2011b] for the full text of this mitigation measure)
- HYD-1 Use of Existing Water Crossings.** This mitigation measure would require the Project to use existing access routes as available; to construct new roads by mowing or crushing vegetation to no less than four inches above grade; to keep new roads to a 12-foot maximum width; to use existing crossings at perennial streams, wetlands, and irrigation channels as feasible; and to restore new access roads that would not be used for ongoing maintenance. (Refer to the Mitigation Planning Section of the EIS/EIR [USFS/BLM/LADWP 2011b] for the full text of this mitigation measure)
- HYD-2 New Road Construction Over Waterways.** This mitigation measure would require roads to be built as near as possible to right angles to streams and washes if feasible; to install culverts where necessary; to minimize disturbance to vegetation and streambeds; to utilize dust control measures during construction; and to leave existing roads in a condition equal to or better than their preconstruction conditions. (Refer to the Mitigation Planning Section of the EIS/EIR [USFS/BLM/LADWP 2011b] for the full text of this mitigation measure)
- BIO-1 Provide restoration/compensation for impacted sensitive vegetation communities.** This mitigation measure would require LADWP to restore disturbed sites to pre-construction conditions or the desired future conditions per the ANF Land Management Plan. (Refer to Table 4 for the full text of this mitigation measure)
- BIO-2 Prevent the spread of invasive weeds.** This mitigation measure would require LADWP to prepare and implement a weed control plan; remove weed seed sources from construction access routes; remove weed seed sources from assembly yards, tower pads, pull sites, landing zones, and spur roads; and use herbicides where necessary to control exotic weeds. (Refer to Table 4 for the full text of this mitigation measure)
- BIO-3 Incorporate riparian area avoidance and mitigation measures.** This mitigation measure would require LADWP seek USFS approval prior to any construction or habitat modification within RCAs; prepare an RCA Treatment Plan in consultation with the USFS; avoid impacts to RCAs to the extent feasible; restore all affected RCAs to their pre-construction conditions; and restore or preserve off-site habitat where permanent RCA impacts are unavoidable. (Refer to Table 4 for the full text of this mitigation measure)
- BIO-4 Provide restoration/compensation for affected jurisdictional areas.** This mitigation measure would require LADWP to avoid impacts to areas under USACE, RWQCB, USFS, or CDFG jurisdiction to the extent feasible and to provide restoration/compensation where applicable. (Refer to Table 4 for the full text of this mitigation measure)

- BIO-5 Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife.** This mitigation measure would require LADWP to conduct preconstruction surveys for special-status species, provide a biological monitor where special-status sign or suitable habitat is identified, and to cover all open trenches or excavations to prevent entrapment of wildlife. (Refer to Table 4 for the full text of this mitigation measure)
- BIO-6 Implement a Worker Environmental Awareness Program.** This mitigation measure would require a qualified biologist to conduct Worker Environmental Awareness Program (WEAP) training for all crew members. (Refer to Table 4 for the full text of this mitigation measure)
- BIO-8 Avoid nesting season and limit disturbance of nesting birds (non-raptor species).** This mitigation measure would require LADWP to conduct pre-construction surveys for non-raptor nests in the Project vicinity; avoid active nests during nesting season where possible; and to consult with BLM, CDFG, USFS, and/or USFWS as applicable where active nest avoidance is infeasible or where inactive nests will be removed. (Refer to Table 4 for the full text of this mitigation measure)
- BIO-11 Reduce avian collisions with and electrocutions on transmission lines.** This mitigation measure would require LADWP to implement the latest APLIC guidelines in the design of new Project structures and to develop an Avian Protection Plan for the Project. (Refer to Table 4 for the full text of this mitigation measure)
- BIO-14 Protect western yellow-billed cuckoo, southwestern willow flycatcher, least Bell's vireo, and their habitat.** This mitigation measure would require LADWP to carry out Project construction in suitable habitat for western yellow-billed cuckoo, southwestern willow flycatcher, and least Bell's vireo outside of their breeding seasons. If this cannot be done, LADWP would be required to conduct protocol/focused surveys for these species; to avoid all identified territories or nests in consultation with BLM, CDFG, USFS, and/or USFWS as applicable; to reduce noise and disturbance in the vicinity of identified territories or nests; and to provide a qualified biological monitor for construction in occupied habitat. (Refer to Table 4 for the full text of this mitigation measure)

Effects Determination

Based on the analysis provided above, the BR RTP may affect, but is not likely to adversely affect, the least Bell's vireo.

Western Yellow-billed Cuckoo

New 230 kV Transmission Line – Western yellow-billed cuckoo is not known to be present in the proposed new 230 kV transmission line corridor and was not detected during surveys of riparian habitat. Tower construction and grading of new and existing access roads would result in habitat and vegetation loss, as well as possible injury or mortality. Tree trimming is likely in order to allow vehicles and equipment to pass without causing damage to trees by breaking branches; this would result in an unknown amount of habitat loss and possibly injury or mortality of adults or young. Construction-related impacts may include noise, traffic, or other human activities that would potentially disturb individual yellow-billed cuckoos that are foraging or passing through the vicinity of the Project area. Depending on specific placement of new towers and access roads, some habitat loss may be permanent, reducing the amount of suitable habitat in this area for the future. Preconstruction surveys, timing limitations (no construction activity would occur near occupied western yellow-billed cuckoo habitat from June through mid-August), and avoidance mitigations would further reduce potential impacts to western yellow-billed cuckoos occurring in the area.

Potential habitat for this species is present in San Francisquito Canyon and Dry Canyon, which could be indirectly impacted by construction activities. Potential indirect impacts to western yellow-billed cuckoos from construction could include increased vulnerability to predators should any individual cuckoos be present and have to leave the area and utilize unfamiliar habitat (which may also reduce individual

fitness), and habitat degradation due to potential spread and establishment of non-native plant species or dust deposition. Their habitat could be degraded by non-native weed species should seeds get stuck in vehicle tires or carriages and fall off within suitable areas of habitat. Dust generated by the Project during transport or construction has the potential to settle onto adjacent vegetation, possibly decreasing plants' vigor by reducing their effectiveness at photosynthesis. Furthermore, because nesting may occur outside of the officially recognized nesting season, if construction approaches any undetected nests with eggs or young, the disturbance may cause the adult(s) to abandon the nest. For this reason, construction will be timed to have the least effect possible on individuals. If this is unavoidable, preconstruction surveys will be conducted within suitable habitat in the Project area, and a biological monitor will remain on-site with construction to reduce human disturbance and noise impacts as possible, as described in BIO-14 (Protect western yellow-billed cuckoo, southwestern willow flycatcher, least Bell's vireo, and their habitat).

Reconductoring – Reconductoring would occur along Segments A, B, G, and K. Segments A, B, and G are analyzed in detail for western yellow-billed cuckoo impacts in the preceding section. The only difference from the new 230 kV transmission line with respect to reconductoring is Segment K, and no potential habitat or known occurrence have been documented along this segment; therefore, no impacts to this species are anticipated from this Project component.

New 230 kV Circuit – No western yellow-billed cuckoo habitat or individuals have been documented along this corridor; therefore, impacts to this species resulting from this Project component are not anticipated.

Barren Ridge Switching Station Expansion – Proposed upgrades to the Barren Ridge Switching Station would occur entirely within Mojave Creosote Bush Scrub habitat. No known habitat or occurrences have been documented for the western yellow-billed cuckoo; therefore, impacts to this species resulting from this Project component are not anticipated.

New Haskell Canyon Switching Station – No western yellow-billed cuckoo habitat or individuals have been documented within the vicinity of the proposed Haskell Canyon Switching Station. Preconstruction surveys, timing limitations, and avoidance mitigations would further reduce potential impacts to western yellow-billed cuckoos occurring in the area. The Haskell Canyon Switching Station would result in no effect to the western yellow-billed cuckoo.

Operation and Maintenance – Operation and maintenance of the proposed transmission lines and substations would pose minimal threat to western yellow-billed cuckoos. Temporary increased human presence, noise, and dust may occur and result in negligible impacts. During emergency operations, temporary disturbance may occur but would be minimized through emergency operation procedures such as briefing crews on sensitive animal procedures and minimized operations in sensitive habitats, as conditions permit.

Summary – Both direct and indirect impacts may occur to western yellow-billed cuckoos as a result of this Project and its construction. While individuals of this species are not known to be present within the Project area, any individuals which may be present during irregular—early or later than normal—breeding times could be displaced as a result of construction. Suitable habitat for this species is located within the Project area; this habitat may be lost or degraded as a result of construction or construction activities. Breeding is not expected to be affected, as construction would occur outside of the breeding season. Avoidance and minimization measures would be enforced during construction to avoid or minimize potential effects to western yellow-billed cuckoos and their habitat.

General practices that would reduce short-term or long-term effects to western yellow-billed cuckoo and to riparian habitat include GP-3, GP-5, GP-8, GP-11, GP-12, GP-17, GP-19, GP-35, GP-38, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short-term or long-

term effects to western yellow-billed cuckoos include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of Existing Water Crossings), HYD-2 (New Road Construction Over Waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-8 (Avoid nesting season and limit disturbance of nesting birds [non-raptor species]), BIO-11 (Reduce avian collisions with and electrocutions on transmission lines), and BIO-14 (Protect western yellow-billed cuckoo, southwestern willow flycatcher, least Bell's vireo, and their habitat).

Mitigation Measures for Impacts to Western Yellow-billed Cuckoos

AIR-2a Implement construction fugitive dust control plan. This mitigation measure would require LADWP to prepare and implement a Fugitive Dust Emission Control Plan. (Refer to the Mitigation Planning Section of the EIS/EIR [USFS/BLM/LADWP 2011b] for the full text of this mitigation measure)

HYD-1 Use of Existing Water Crossings. This mitigation measure would require the Project to use existing access routes as available; to construct new roads by mowing or crushing vegetation to no less than four inches above grade; to keep new roads to a 12-foot maximum width; to use existing crossings at perennial streams, wetlands, and irrigation channels as feasible; and to restore new access roads that would not be used for ongoing maintenance. (Refer to the Mitigation Planning Section of the EIS/EIR [USFS/BLM/LADWP 2011b] for the full text of this mitigation measure)

HYD-2 New Road Construction Over Waterways. This mitigation measure would require roads to be built as near as possible to right angles to streams and washes if feasible; to install culverts where necessary; to minimize disturbance to vegetation and streambeds; to utilize dust control measures during construction; and to leave existing roads in a condition equal to or better than their preconstruction conditions. (Refer to the Mitigation Planning Section of the EIS/EIR [USFS/BLM/LADWP 2011b] for the full text of this mitigation measure)

BIO-1 Provide restoration/compensation for impacted sensitive vegetation communities. This mitigation measure would require LADWP to restore disturbed sites to pre-construction conditions or the desired future conditions per the ANF Land Management Plan. (Refer to Table 4 for the full text of this mitigation measure)

BIO-2 Prevent the spread of invasive weeds. This mitigation measure would require LADWP to prepare and implement a weed control plan; remove weed seed sources from construction access routes; remove weed seed sources from assembly yards, tower pads, pull sites, landing zones, and spur roads; and use herbicides where necessary to control exotic weeds. (Refer to Table 4 for the full text of this mitigation measure)

BIO-3 Incorporate riparian area avoidance and mitigation measures. This mitigation measure would require LADWP seek USFS approval prior to any construction or habitat modification within RCAs; prepare an RCA Treatment Plan in consultation with the USFS; avoid impacts to RCAs to the extent feasible; restore all affected RCAs to their pre-construction conditions; and restore or preserve off-site habitat where permanent RCA impacts are unavoidable. (Refer to Table 4 for the full text of this mitigation measure)

BIO-4 Provide restoration/compensation for affected jurisdictional areas. This mitigation measure would require LADWP to avoid impacts to areas under USACE, RWQCB, USFS, or CDFG jurisdiction to the extent feasible and to provide restoration/compensation where applicable. (Refer to Table 4 for the full text of this mitigation measure)

BIO-5 Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife. This mitigation measure would require LADWP to conduct preconstruction surveys for special-status species, provide a biological monitor where special-

status sign or suitable habitat is identified, and to cover all open trenches or excavations to prevent entrapment of wildlife. (Refer to Table 4 for the full text of this mitigation measure)

BIO-6 Implement a Worker Environmental Awareness Program. This mitigation measure would require a qualified biologist to conduct Worker Environmental Awareness Program (WEAP) training for all crew members. (Refer to Table 4 for the full text of this mitigation measure)

BIO-8 Avoid nesting season and limit disturbance of nesting birds (non-raptor species). This mitigation measure would require LADWP to conduct pre-construction surveys for non-raptor nests in the Project vicinity; avoid active nests during nesting season where possible; and to consult with BLM, CDFG, USFS, and/or USFWS as applicable where active nest avoidance is infeasible or where inactive nests will be removed. (Refer to Table 4 for the full text of this mitigation measure)

BIO-11 Reduce avian collisions with and electrocutions on transmission lines. This mitigation measure would require LADWP to implement the latest APLIC guidelines in the design of new Project structures and to develop an Avian Protection Plan for the Project. (Refer to Table 4 for the full text of this mitigation measure)

BIO-14 Protect western yellow-billed cuckoo, southwestern willow flycatcher, least Bell's vireo, and their habitat. This mitigation measure would require LADWP to carry out Project construction in suitable habitat for western yellow-billed cuckoo, southwestern willow flycatcher, and least Bell's vireo outside of their breeding seasons. If this cannot be done, LADWP would be required to conduct protocol/focused surveys for these species; to avoid all identified territories or nests in consultation with BLM, CDFG, USFS, and/or USFWS as applicable; to reduce noise and disturbance in the vicinity of identified territories or nests; and to provide a qualified biological monitor for construction in occupied habitat. (Refer to Table 4 for the full text of this mitigation measure)

Effects Determination

Based on the analysis above, the Proposed Action **may affect, but is not likely to adversely affect**, the yellow-billed cuckoo.

7.1.3 Reptile

Desert Tortoise

New 230 kV Transmission Line – The new 230 kV transmission line corridor would cross approximately four miles of occupied desert tortoise habitat (POWER 2009). The northern portion of the 230 kV corridor supports the highest quality tortoise habitat, and most tortoises were observed in these areas (Appendix D). Project construction could result in direct adverse effects to desert tortoise. Injury or mortality could occur to tortoises underground in undetected burrows that are driven over by construction vehicles or equipment, or to tortoises that are under vegetation and are not detected during construction or pre-construction surveys. Permanent habitat loss would occur as a result of the construction of new transmission towers and new access roads, resulting in decreased forage and vegetative cover for tortoises in the area. Because tortoises may use desert washes as habitat, excessive disturbance to these areas as a result of construction would degrade and possibly reduce habitat further. During construction, increased predation could occur from ravens and coyotes, which are attracted to human activity to scavenge for food. Tortoises that wander too close to construction would require manual relocation by an authorized biologist and would likely undergo stress during the movement process and possibly afterward, until they are able to find suitable shelter again. Since vegetation re-growth is a slow process in this arid climate, creosote bushes large enough to provide good cover would take a decade to revegetate the area.

Habitat loss and reduced vegetation may subject desert tortoises to increased predation from aerial predators by decreasing the amount of cover available to hide under. Additionally, construction of a new transmission line would increase nesting and perching opportunities for raptors, increasing the likelihood

of predation on desert tortoises. After construction is completed, injury or mortality from vehicle collisions may occur during maintenance activities and security patrols.

The Project would comply with all regulations regarding protection of the desert tortoise. The following recommended mitigation measures are expected to avoid and minimize adverse impacts to this species:

- Pre-construction surveys for presence along the proposed route,
- Restricting surface disturbance to the minimum amount needed for construction,
- Educating construction personnel about listed species,
- Full-time construction monitoring by qualified biologists,
- Placement of tortoise fencing in areas of known tortoise habitat,
- Restoring habitat in areas temporarily disturbed during project construction, and
- Payment of mitigation fees for habitat compensation.
- Imposing speed limits of 20 mph through desert tortoise habitat
- Requiring employees to inspect under vehicles before driving

The above list is not comprehensive; a detailed list of proposed mitigations is included in BIO-23. These mitigations would reduce impacts to the desert tortoise.

Reconductoring – Reconductoring would occur along Segments A, B, G, and K. Segments A, B, and G are analyzed in detail for desert tortoise impacts in the preceding section. The only difference from the Proposed Action with respect to reconductoring is Segment K, and no potential habitat or known occurrence have been documented along this segment.

New 230 kV Circuit – No known desert tortoise habitat or individuals have been documented along this corridor. The new 230 kV circuit would not affect desert tortoise.

Barren Ridge Switching Station Expansion – The proposed expansion of the Barren Ridge Switching Station would potentially result in direct impact to the desert tortoise. The additional 2.7 acres required for the expansion would be within known occupied desert tortoise habitat. Tortoises were observed during the 2008 surveys (POWER 2009). Any tortoises which are present within the construction area would be relocated and would be permanently excluded from this area. Because the average desert tortoise home range can be anywhere from 10 to 100 acres (Meyer 2008), the 2.7-acre expansion of the existing Barren Ridge Switching Station would remove approximately 2.7 – 27% of the average home range. Because this operation would be an expansion of the existing facility and not a separate facility in a different patch of habitat, it would increase the size of the continuous disturbance without forcing any local desert tortoises to travel through fragments of habitat between facilities. Expansion of the switching station may indirectly lead to tortoise mortality if any tortoises are present within the footprint by increasing their likelihood of predation by ravens. This could occur if a tortoise is moved outside of the construction area and does not have a burrow yet, or by the increased human presence increasing the number of ravens on-site. Presence of a qualified biological monitor and implementation of tortoise mitigation as described in BIO-23 would reduce the risk of some of these impacts, although habitat loss is unavoidable. Construction would result in degradation of desert tortoise habitat due to soil and vegetation disturbance, introduction of non-native plant species, habitat fragmentation, and increased noise, traffic, equipment movement, and human presence. Disease resulting from human-caused stress is also taking a heavy toll on the desert tortoise (Berry 2008). The Barren Ridge Switching Station expansion would result in an adverse affect to the desert tortoise due to direct activities in occupied habitat. Preconstruction surveys, timing limitations, and avoidance measures would further reduce potential impacts to the desert tortoise.

New Haskell Canyon Switching Station – No known desert tortoise habitat or tortoises have been documented within the proposed Haskell Canyon Switching Station footprint. The Haskell Canyon Switching Station would not affect the desert tortoise.

Operation and Maintenance – Operation and maintenance of the proposed transmission lines and substations could pose a threat to the desert tortoise. Ground and air monitoring of the lines would be limited in areas of high desert tortoise density and during their more active periods (spring time, early to mid morning in summer, and on rainy days outside of the hibernation period). Temporary increased human presence, noise, and dust may occur and result in moderate impacts to the desert tortoise. During emergency operations, temporary disturbance may occur but would be minimized through emergency operation procedures such as briefing crews on measures to prevent adverse impacts to the desert tortoise. However, maintenance is often required during heavy rainfall events that may draw the tortoise out of its burrow, exposing it to increased risk from moving equipment. Operation and maintenance of the BRRTP would likely cause adverse impacts to the desert tortoise due to incidental takes due to moving vehicles. Preconstruction surveys, timing limitations, and avoidance measures would further reduce potential impacts to the desert tortoise.

Summary – Both direct and indirect effects to the desert tortoise may occur as a result of this Project and its construction. Habitat loss and degradation in the northern sections of the Project are unavoidable due to the widespread presence of suitable habitat and large ranges of individual tortoises. Long-term increased predation is probably unlikely due to the presence of two existing transmission lines in this area; however, short-term predation may increase if scavengers are attracted to human activities during construction. Avoidance and mitigation measures would be enforced during construction to reduce potential impacts to the desert tortoise, which is known to be present in the Project area. General practices that would reduce short-term or long-term effects to desert tortoise include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to desert tortoise include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of Existing Water Crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-23 (Protect desert tortoise and habitat loss).

AIR-2a Implement construction fugitive dust control plan. This mitigation measure would require LADWP to prepare and implement a Fugitive Dust Emission Control Plan. (Refer to the Mitigation Planning Section of the EIS/EIR [USFS/BLM/LADWP 2011b] for the full text of this mitigation measure)

HYD-1 Use of Existing Water Crossings. This mitigation measure would require the Project to use existing access routes as available; to construct new roads by mowing or crushing vegetation to no less than four inches above grade; to keep new roads to a 12-foot maximum width; to use existing crossings at perennial streams, wetlands, and irrigation channels as feasible; and to restore new access roads that would not be used for ongoing maintenance. (Refer to the Mitigation Planning Section of the EIS/EIR [USFS/BLM/LADWP 2011b] for the full text of this mitigation measure)

BIO-1 Provide restoration/compensation for impacted sensitive vegetation communities. This mitigation measure would require LADWP to restore disturbed sites to pre-construction conditions or the desired future conditions per the ANF Land Management Plan. (Refer to Table 4 for the full text of this mitigation measure)

BIO-2 Prevent the spread of invasive weeds. This mitigation measure would require LADWP to prepare and implement a weed control plan; remove weed seed sources from construction access routes; remove weed seed sources from assembly yards, tower pads, pull sites, landing zones, and spur roads; and use herbicides where necessary to control exotic weeds. (Refer to Table 4 for the full text of this mitigation measure)

BIO-5 Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife. This mitigation measure would require LADWP to conduct preconstruction surveys for special-status species, provide a biological monitor where special-

status sign or suitable habitat is identified, and to cover all open trenches or excavations to prevent entrapment of wildlife. (Refer to Table 4 for the full text of this mitigation measure)

BIO-6 Implement a Worker Environmental Awareness Program. This mitigation measure would require a qualified biologist to conduct Worker Environmental Awareness Program (WEAP) training for all crew members. (Refer to Table 4 for the full text of this mitigation measure)

BIO-23 Protect desert tortoise and habitat loss. This mitigation measure would require LADWP to conduct pre-construction surveys for desert tortoise within the Project vicinity; to flag and avoid identified burrows; to retain a qualified and permitted biological monitor on-site or on-call during Project construction in suitable desert tortoise habitat; to halt construction if a tortoise is observed near construction; to restrict work hours and vehicle speeds; to undergo a desert tortoise education program for all construction personnel; to remove all trash from the construction area daily; and to install tortoise-proof fencing where tortoises are known to occur during construction. (Refer to Table 4 for the full text of this mitigation measure)

Effects Determination

Based on the analysis provided above, the BR RTP may affect, and is likely to adversely affect, the desert tortoise.

7.1.4 Amphibians

California Red-legged Frog

New 230 kV Transmission Line – Based on known locations and protocol survey results of California red-legged frog in the vicinity of the proposed new 230 kV line, direct effects to individual frogs are not expected (POWER 2010). California red-legged frogs are only known to occur within the St. Francis Dam reach of San Francisquito Creek, which is located several miles downstream of where the transmission line would cross into San Francisquito Canyon and would be separated from the transmission line in Dry Canyon by a steep mountainside. In addition, the morphology of San Francisquito Creek is typical of a semi-arid region where flow is extremely variable and sediment flux is highly episodic. The total long-term coarse sediment yield for the range of flows for San Francisquito Creek was found to be greater than 0.0625 mm (tons/day) (Stillwater Sciences 2009). Therefore it was determined that the designated critical habitat unit LOS-1 would not be affected by construction or resulting sedimentation.

Based on protocol surveys, potential habitat was found directly under the transmission line in Dry Canyon in an area known as Drinkwater Flat, where there is a perennial section of streambed within coast live oak riparian woodland. The transmission line would cross directly through this area, which could possibly result in habitat loss or degradation depending on exact tower locations and availability of existing access roads. Preconstruction surveys, timing limitations (no construction activity would occur near occupied California red-legged frog habitat from mid-May through the end of August), and avoidance mitigations would further reduce potential impacts to California red-legged frog potentially occurring in the area. Encroachment into this area is not expected except possibly by foot traffic during the final line-stringing phase. Direct injury or mortality could occur during this process if an individual is present and crushed by foot traffic. However, because California red-legged frogs are not restricted to water and are known to pass over land during migration, there could also be inadvertent crushing by equipment along the access road or in the tower construction areas (Bulger et al. 2003, Rathbun and Scott 2010).

Construction of the new 230 kV line could result in indirect adverse impacts to California red-legged frogs. Decreased fertility or inability to breed could occur due to increased stress, unsuitable breeding habitat, or failure to find a mate in new habitat patches. However, California red-legged frogs are not expected to be present or encountered during construction and the above scenarios are unlikely. Additionally, construction could result in habitat degradation as a result of increased non-native plant species due to plant seeds attaching to vehicle tires or carriages and falling off in streambeds. Dust raised

by vehicles or construction of transmission towers or access roads could settle on surrounding vegetation, possibly reducing the effectiveness of individual plants' photosynthetic processes. Habitat degradation may occur after the Project has been constructed due to ongoing maintenance and security patrols in the future, but it is expected that patrols would likely stay on the main access road unless a problem is discovered that requires individual tower access.

Reconductoring – Reconductoring would occur along Segments A, B, G, and K. Segments A, B, and G are analyzed in detail for California red-legged frog impacts in the preceding section. The only difference from the Proposed Action with respect to reconductoring is Segment K, and no potential habitat or known occurrence have been documented along this segment; therefore, impacts to this species resulting from this Project component are not anticipated.

New 230 kV Circuit – The only probable California red-legged frog detected during the 2008 and 2009 protocol surveys was a tadpole found on April 8, 2008 at Site Assessment #1 under the location where the reconductoring would cross San Francisquito Creek (POWER 2010). However, because of the lack of any other observed potential California red-legged frog tadpoles combined with the general inadequacy of the site for this species' breeding requirements, it is likely that the tadpole washed downstream from the known occupied habitat approximately four miles upstream. Due to a sharp rise in precipitation in the Saugus area in the two months preceding the identification of this tadpole, this is a possible scenario (CDEC 2010). In this case, because the habitat at this location is not normally suitable to support this species, it is unlikely to be present, particularly because the site was observed to be dry during subsequent visits. However, should this species be present in this section of San Francisquito Creek again, several construction impacts could occur. Because the tadpole was present in a portion of the creek that is adjacent to a residence and crossing the creek is the only way for the residents to reach their home, this area likely experiences daily vehicle traffic, resulting in periodic disruption of water and stirring of sediment in the stream's substrate. Increasing the number of vehicles passing through this area by adding construction vehicles and equipment would increase the amount of sedimentation in the creek in this area and increase the risk of habitat degradation along the creek through spread of non-native plant seeds around the banks and vehicular fluid spills. Daily disturbance would reduce the likelihood of frogs being present or nesting in the immediate road crossing, but if egg masses, tadpoles, or frogs are present then the risk of crushing would be increased. Project mitigation would require a qualified biologist to conduct surveys if habitat or conditions are suitable for California red-legged frogs to be present, and if found in the vicinity of the stream crossing, the crossing would be excluded from access while inundated. No other areas were found on this segment that had the potential to support the California red-legged frog and based on the survey results, no suitable habitat is located along this Project component. Therefore, impacts to this species resulting from this Project component are not anticipated.

Barren Ridge Switching Station Expansion – Proposed upgrades to the Barren Ridge Switching Station would occur entirely within Mojave Creosote Bush Scrub habitat. No known habitat or occurrences have been documented for the California red-legged frog, and impacts to this species resulting from this Project component are not anticipated.

New Haskell Canyon Switching Station – No known California red-legged frog habitat or individuals have been documented within the proposed Haskell Canyon Switching Station footprint or access roads that lead to the switching station site.

Operation and Maintenance – Operation and maintenance of the proposed transmission lines and substations would pose minimal threat to California red-legged frog. Temporary increased human presence, noise, and dust may occur and result in impacts; however, they would likely be negligible given the sporadic nature of these activities. During emergency operations, temporary disturbance may occur but would be minimized through emergency operation procedures such as briefing crews on sensitive animal procedures and the incorporation of riparian area avoidance and permit measures (BIO-3).

Construction crews will also avoid impacting the streambeds and banks of any streams along the route, including access roads, to the extent feasible. When construction or maintenance work affects the bed, bank or margins of a stream under CDFG jurisdiction, LADWP will notify CDFG as required under Fish and Game Code Section 1602, which may include securing a Streambed Alteration Agreement (GP -54).

Summary – Direct impacts to California red-legged frogs are not expected as a result of this Project and its construction. The only known population of this species is located outside of the Project area. Based on conditions and topography outside of this occupied habitat, individuals from this population are not expected to migrate into work areas. However, suitable habitat for this species is located within or around work areas, such as within Drinkwater Flat. This habitat is not known to be occupied, but depending on final structure locations and access roads, it may be affected or degraded by Project construction. Avoidance and minimization measures would be enforced during construction to avoid potential impacts to the California red-legged frog and its habitat. General practices that would reduce short-term and long-term effects to California red-legged frog and its habitat include GP-3, GP-5, GP-11, GP-12, GP-17, GP-19, GP-24, GP-34, GP-35, GP-38, GP-41, GP-42, GP-43, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short-term or long-term effects to California red-legged frog and its habitat include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of Existing Water Crossings), HYD-2 (New Road Construction Over Waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-24 (Protect arroyo toad and California red-legged frog).

Mitigation Measures for Effects to California Red-legged Frog

- AIR-2a Implement construction fugitive dust control plan.** This mitigation measure would require LADWP to prepare and implement a Fugitive Dust Emission Control Plan. (Refer to the Mitigation Planning Section of the EIS/EIR [USFS/BLM/LADWP 2011b] for the full text of this mitigation measure)
- HYD-1 Use of Existing Water Crossings.** This mitigation measure would require the Project to use existing access routes as available; to construct new roads by mowing or crushing vegetation to no less than four inches above grade; to keep new roads to a 12-foot maximum width; to use existing crossings at perennial streams, wetlands, and irrigation channels as feasible; and to restore new access roads that would not be used for ongoing maintenance. (Refer to the Mitigation Planning Section of the EIS/EIR [USFS/BLM/LADWP 2011b] for the full text of this mitigation measure)
- HYD-2 New Road Construction Over Waterways.** This mitigation measure would require roads to be built as near as possible to right angles to streams and washes if feasible; to install culverts where necessary; to minimize disturbance to vegetation and streambeds; to utilize dust control measures during construction; and to leave existing roads in a condition equal to or better than their preconstruction conditions. (Refer to the Mitigation Planning Section of the EIS/EIR [USFS/BLM/LADWP 2011b] for the full text of this mitigation measure)
- BIO-1 Provide restoration/compensation for impacted sensitive vegetation communities.** This mitigation measure would require LADWP to restore disturbed sites to pre-construction conditions or the desired future conditions per the ANF Land Management Plan. (Refer to Table 4 for the full text of this mitigation measure)
- BIO-2 Prevent the spread of invasive weeds.** This mitigation measure would require LADWP to prepare and implement a weed control plan; remove weed seed sources from construction access routes; remove weed seed sources from assembly yards, tower pads, pull sites, landing zones, and spur roads; and use herbicides where necessary to control exotic weeds. (Refer to Table 4 for the full text of this mitigation measure)

- BIO-3 Incorporate riparian area avoidance and mitigation measures.** This mitigation measure would require LADWP seek USFS approval prior to any construction or habitat modification within RCAs; prepare an RCA Treatment Plan in consultation with the USFS; avoid impacts to RCAs to the extent feasible; restore all affected RCAs to their pre-construction conditions; and restore or preserve off-site habitat where permanent RCA impacts are unavoidable. (Refer to Table 4 for the full text of this mitigation measure)
- BIO-4 Provide restoration/compensation for affected jurisdictional areas.** This mitigation measure would require LADWP to avoid impacts to areas under USACE, RWQCB, USFS, or CDFG jurisdiction to the extent feasible and to provide restoration/compensation where applicable. (Refer to Table 4 for the full text of this mitigation measure)
- BIO-5 Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife.** This mitigation measure would require LADWP to conduct preconstruction surveys for special-status species, provide a biological monitor where special-status sign or suitable habitat is identified, and to cover all open trenches or excavations to prevent entrapment of wildlife. (Refer to Table 4 for the full text of this mitigation measure)
- BIO-6 Implement a Worker Environmental Awareness Program.** This mitigation measure would require a qualified biologist to conduct Worker Environmental Awareness Program (WEAP) training for all crew members. (Refer to Table 4 for the full text of this mitigation measure)
- BIO-24 Protect arroyo toad and California red-legged frog.** This mitigation measure would require LADWP to conduct protocol surveys for arroyo toad and California red-legged frog in suitable habitat for these species within the Project vicinity; to retain a qualified biological monitor in occupied habitat during Project construction; to remove trash daily; to restrict construction dates, work hours, and vehicle speeds; to construct exclusion fencing where appropriate; and to promptly clean hazardous material spills in potentially occupied habitat and report spills to the USFWS and USFS. The biological monitor(s) will also be expected to take all measures to prevent the spread of diseases between sites. (Refer to Table 4 for the full text of this mitigation measure)

There is no designated critical habitat located within the Project area, although Unit LOS-1 is located approximately 0.20 mile west of the proposed new 230 kV transmission line centerline at its closest proximity. Construction access would be limited to roads that avoid entering this critical habitat, thus avoiding direct impacts to it.

Effects Determination

Based on the analysis provided, the BRRTP **may affect, but is not likely to adversely affect**, the California red-legged frog. In addition the Proposed Action will have **no effect** on designated critical habitat for the California red-legged frog.

Arroyo Toad

New 230 kV Transmission Line – Construction activities could potentially directly and indirectly affect arroyo toads as a result of habitat (breeding and upland) removal and may cause harm or harassment and direct disturbance to arroyo toads. However, no arroyo toads were observed during three years of protocol surveys along the proposed alignment. Surveys included areas up to three miles from the transmission corridor to account for potential indirect impacts from construction (POWER 2010). Project construction could also result in habitat degradation as a result of vehicles leaking fluids into streambeds or causing increased sedimentation if driving through wet crossings. Human presence could result in increased predator presence in the Project area, particularly if food trash is not properly contained, resulting in possible injuries or mortalities to individuals that may emerge from aestivation during construction. Mitigation measures BIO-24 (Protect arroyo toad and California red-legged frog) requires that a qualified biological monitor will ensure that daily efforts are made to eliminate or secure all trash on or near all work sites and roads. All trash receptacles will be fitted with animal- and weather-proof lids. However,

based on known occurrences and protocol surveys conducted in 2008 and 2009, this species is unlikely to occur within or near the proposed ROW.

Reconductoring – Reconductoring would occur along Segments A, B, G, and K. Segments A, B, and G are analyzed in detail above for arroyo toad impacts in the preceding section. The only difference from the new 230 kV transmission line with respect to reconductoring is Segment K, and no arroyo toad habitat or known occurrence have been documented along this segment; therefore, impacts to this species resulting from this Project component are not anticipated.

New 230 kV Circuit – The addition of the 230 kV circuit and its existing access roads do not cross potential habitat for the arroyo toad. No arroyo toads have been documented along the 230 kV line. Designated critical habitat is located within Castaic Creek just northeast of the Castaic Power Plant in an area known as Unit 6: Upper Santa Clara River Basin (50 CFR part 17). The Project would not span over this area, and access roads would not cross this area. The boundaries of Unit 6 extend to within 0.16 mile from the proposed new 230 kV circuit ROW. Unit 6 is also upstream from the proposed new 230 kV circuit ROW. There may be indirect construction effects to arroyo toad, as a breeding population in Castaic Creek, which is just northeast of where the new 230 kV circuit route ends at Castaic Power Plant, is present. Because adult anurans are known to be active nocturnally and not usually diurnally, it is unlikely that any toads would be present on the surface during construction, assuming regular hours. Toads may be aestivating within the construction area, but this is unlikely given that observations have shown that inland populations of arroyo toads are more likely to aestivate directly within the streambed rather than dispersing into distant upland habitat (Ramirez 2007). Habitat loss would not occur where this population is, since construction would not enter the area of occupied habitat in Castaic Creek or critical habitat, which is approximately 0.16 mile from the 230 kV Circuit ROW.

Indirect impacts may occur as a result from sedimentation. A watershed analysis was conducted for BR RTP (see the BR RTP Water Resources Technical Report in Volume IV of the EIS/EIR, USFS/BLM/LADWP 2011, for details on how this analysis was conducted). The new 230 kV circuit would affect the Middle Castaic Creek and Lower Castaic Creek subwatersheds with a combined area of 42,212 acres. Estimated average baseline annual erosion for these subwatersheds is 48.55 tons/acre/year. With construction of the new 230 kV circuit, predicted average annual erosion would be 49 tons/acre/year, an increase of 0.95 percent over baseline. The ground disturbance activities could potentially alter drainage patterns within the work areas and result in soil erosion, leading to increased sedimentation. However, with the implementation of mitigation measures HYD-01 and HYD-02 the potential impacts (less than 1% over baseline) resulting from substantial drainage pattern alteration is considered less than significant for CEQA.

South of the Castaic Reservoir along the 230 kV circuit marginal habitat was identified within Charlie Canyon; due to its marginal quality, lack of water, and jurisdiction outside of the ANF, this area was not surveyed. This habitat may be driven through for construction access to tower sites on the northern side of the canyon. It is unlikely that habitat in the streambed would be directly affected beyond changes in the microhabitat resulting from equipment driving through the streambed crossings. If water is present, this would result in increased sedimentation and changes in hydrology. Based on the habitat assessment and known USFWS habitat locations, arroyo toads are not expected to be present in this area.

Barren Ridge Switching Station Expansion – The Barren Ridge Switching Station expansion would be entirely within the desert habitat, and no arroyo toad habitat or individuals have been documented within the site. A habitat assessment was conducted in 2008 to verify the vegetation community present within in the Barren Ridge Switching Station expansion footprint (POWER 2010); therefore, impacts to this species resulting from this Project component are not anticipated.

New Haskell Canyon Switching Station – The proposed Haskell Canyon Switching Station site is not within potential habitat for arroyo toads. Indirect impacts could occur from introduction of non-native plants to surrounding riparian habitat, and BIO-2 (Prevent the spread of invasive weeds) would be implemented to reduce the likelihood of this occurring. However, the switching station would have no effect on the arroyo toad or its designated critical habitat.

Operation and Maintenance – Operation and maintenance of the proposed transmission lines and substations would pose minimal threat to arroyo toads. Temporary increased human presence, noise, and dust may occur and are considered to be negligible impacts. During emergency operations, temporary disturbance may occur but would be minimized through emergency operation procedures such as briefing crews on sensitive animal procedures and the incorporation of riparian area avoidance and permit measures (BIO-3). Construction crews will also avoid impacting the streambeds and banks of any streams along the route, including access roads, to the extent feasible. When construction or maintenance work affects the bed, bank or margins of a stream under CDFG jurisdiction, LADWP will notify CDFG as required under Fish and Game Code Section 1602, which may include securing a Streambed Alteration Agreement (GP -74).

Summary – Indirect impacts may occur to arroyo toads as a result of this Project and its construction. Some of these effects may be avoidable due to the expectation that arroyo toads will not be present within work areas based on their known occurrences and survey results (POWER 2010). In addition to the three years of protocol surveys conducted within the Project area, preconstruction surveys, timing limitations, and avoidance mitigations would further reduce potential impacts to the arroyo toad.

No impacts to the arroyo toad proposed critical habitat are anticipated. The existing transmission line that would be strung with a new 230 kV conductor is not within the boundaries of the final designated critical habitat.

General practices that would reduce short-term and long-term effects to arroyo toad and its habitat include GP-3, GP-5, GP-11, GP-12, GP-17, GP-19, GP-24, GP-34, GP-35, GP-38, GP-41, GP-42, GP-43, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short-term or long-term effects to arroyo toad and its habitat include AIR-2a (Implement construction fugitive dust control plan), HYD-01 (Use of Existing Water Crossings), HYD-02 (New Road Construction Over Waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-24 (Protect arroyo toad and California red-legged frog).

Mitigation Measures for Effects to Arroyo Toad

AIR-2a Implement construction fugitive dust control plan. This mitigation measure would require LADWP to prepare and implement a Fugitive Dust Emission Control Plan. (Refer to the Mitigation Planning Section of the EIS/EIR [USFS/BLM/LADWP 2011b] for the full text of this mitigation measure)

HYD-1 Use of Existing Water Crossings. This mitigation measure would require the Project to use existing access routes as available; to construct new roads by mowing or crushing vegetation to no less than four inches above grade; to keep new roads to a 12-foot maximum width; to use existing crossings at perennial streams, wetlands, and irrigation channels as feasible; and to restore new access roads that would not be used for ongoing maintenance. (Refer to the Mitigation Planning Section of the EIS/EIR [USFS/BLM/LADWP 2011b] for the full text of this mitigation measure)

- HYD-2 New Road Construction Over Waterways.** This mitigation measure would require roads to be built as near as possible to right angles to streams and washes if feasible; to install culverts where necessary; to minimize disturbance to vegetation and streambeds; to utilize dust control measures during construction; and to leave existing roads in a condition equal to or better than their preconstruction conditions. (Refer to the Mitigation Planning Section of the EIS/EIR [USFS/BLM/LADWP 2011b] for the full text of this mitigation measure)
- BIO-1 Provide restoration/compensation for impacted sensitive vegetation communities.** This mitigation measure would require LADWP to restore disturbed sites to pre-construction conditions or the desired future conditions per the ANF Land Management Plan. (Refer to Table 4 for the full text of this mitigation measure)
- BIO-2 Prevent the spread of invasive weeds.** This mitigation measure would require LADWP to prepare and implement a weed control plan; remove weed seed sources from construction access routes; remove weed seed sources from assembly yards, tower pads, pull sites, landing zones, and spur roads; and use herbicides where necessary to control exotic weeds. (Refer to Table 4 for the full text of this mitigation measure)
- BIO-3 Incorporate riparian area avoidance and mitigation measures.** This mitigation measure would require LADWP seek USFS approval prior to any construction or habitat modification within RCAS; prepare an RCA Treatment Plan in consultation with the USFS; avoid impacts to RCAs to the extent feasible; restore all affected RCAs to their pre-construction conditions; and restore or preserve off-site habitat where permanent RCA impacts are unavoidable. (Refer to Table 4 for the full text of this mitigation measure)
- BIO-4 Provide restoration/compensation for affected jurisdictional areas.** This mitigation measure would require LADWP to avoid impacts to areas under USACE, RWQCB, USFS, or CDFG jurisdiction to the extent feasible and to provide restoration/compensation where applicable. (Refer to Table 4 for the full text of this mitigation measure)
- BIO-5 Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife.** This mitigation measure would require LADWP to conduct preconstruction surveys for special-status species, provide a biological monitor where special-status sign or suitable habitat is identified, and to cover all open trenches or excavations to prevent entrapment of wildlife. (Refer to Table 4 for the full text of this mitigation measure)
- BIO-6 Implement a Worker Environmental Awareness Program.** This mitigation measure would require a qualified biologist to conduct Worker Environmental Awareness Program (WEAP) training for all crew members. (Refer to Table 4 for the full text of this mitigation measure)
- BIO-24 Protect arroyo toad and California red-legged frog.** This mitigation measure would require LADWP to conduct protocol surveys for arroyo toad and California red-legged frog in suitable habitat for these species within the Project vicinity; to retain a qualified biological monitor in occupied habitat during Project construction; to remove trash daily; to restrict construction dates, work hours, and vehicle speeds; to construct exclusion fencing where appropriate; and to promptly clean hazardous material spills in potentially occupied habitat and report spills to the USFWS and USFS. The biological monitor(s) will also be expected to take all measures to prevent the spread of diseases between sites. (Refer to Table 4 for the full text of this mitigation measure)

Effect Determination

Based on the analysis provided, the BR RTP may affect, but is not likely to adversely affect, the arroyo toad.

7.1.5 Fish

Unarmored Threespine Stickleback

New 230 kV Transmission Line – No direct impacts are expected to occur to unarmored threespine stickleback, which is not expected to occur within the proposed new 230 kV transmission line corridor.

Indirect impacts to unarmored threespine stickleback could include habitat degradation in the habitat located just downstream of where the transmission line would cross into San Francisquito Canyon. This could occur due to runoff from Project equipment passing over stream crossings just upstream of the habitat. Additionally, Project equipment and vehicles could carry non-native plant seeds in their tires or on their carriages, potentially resulting in the spread of non-native plant species if the seeds fall off and propagate in new areas. However, the habitat is no longer expected to be inhabited by the unarmored threespine stickleback due to flooding and fires in the early 2000s (75 FR 28636 28642, CDFG 2010).

Reconductoring – Reconductoring would occur along Segments A, B, G, and K. Segments A, B, and G are analyzed in detail for unarmored threespine stickleback impacts in the preceding section. The only difference from the new 230 kV transmission line with respect to reconductoring is Segment K, where this species is likely to occur due to numerous sightings within the Santa Clara River (CDFG 2011a). While this species has not been recorded elsewhere along the corridor length, any vehicular crossings through streambeds by vehicles checking reconductoring success at each tower would possibly affect stickleback habitat. If the areas are wet at the time of reconductoring, this could result in sediment deposition and hydrological changes from vehicle tires; if streambeds are dry, then it would likely result in slight changes to the streambed substrate, but notably less than when wet. To analyze this sediment deposition, a watershed analysis was conducted for BR RTP (see the BR RTP Water Resources Technical Report in Volume IV of the EIS/EIR, USFS/BLM/LADWP 2011, for details on how this analysis was conducted). The reconductoring would affect the Sand Canyon-Santa Clara River subwatershed, which has a combined area of 38,533 acres. Estimated average baseline annual erosion for this subwatershed is 47.69 tons/acre/year. With construction of the reconductoring along Segment K, predicted average annual erosion would be 47.75 tons/acre/year, an increase of 0.11 percent increase over baseline. The ground disturbance activities could potentially alter drainage patterns within the work areas and result in soil erosion leading to increased sedimentation. However, with the implementation of mitigation measures HYD-01 and HYD-02 (Table 4.3.3-1), the potential impacts (less than 1% over baseline) resulting from substantial drainage pattern alteration would be considered less than significant for CEQA.

New 230 kV Circuit – No unarmored threespine stickleback habitat or individuals have been documented along this corridor; therefore, impacts to this species resulting from this Project component are not anticipated.

Barren Ridge Switching Station Expansion – Proposed upgrades to the Barren Ridge Switching Station would occur entirely within Mojave Creosote Bush Scrub habitat. No known habitat or occurrences have been documented for the unarmored threespine stickleback; therefore, impacts to this species resulting from this Project component are not anticipated.

New Haskell Canyon Switching Station – No known unarmored threespine stickleback habitat or individuals have been documented in the vicinity of the proposed Haskell Canyon Switching Station or its associated access roads; therefore, impacts to this species resulting from this Project component are not anticipated.

Operation and Maintenance – Operation and maintenance of the proposed transmission lines and substations would pose minimal threat to the unarmored threespine stickleback. Ground and air monitoring of the lines would not impact potential habitat along the San Francisquito Creek. Temporary increased dust may occur and result in negligible impacts. During emergency operations, temporary disturbance may occur but would be minimized through emergency operation procedures such as briefing crews on sensitive animal procedures and the incorporation of riparian area avoidance and permit measures (BIO-3). Construction crews will also avoid impacting the streambeds and banks of any streams along the route, including access roads, to the extent feasible. When construction or maintenance work affects the bed, bank or margins of a stream under CDFG jurisdiction, LADWP will notify CDFG as required under Fish and Game Code Section 1602, which may include securing a Streambed Alteration

Agreement (GP -74).

Summary – Unarmored threespine stickleback is not expected to be present within the Project area except possibly in Segment K of the reconductoring corridor. Habitat degradation could occur as a result of vehicular access in areas that are upstream of suitable habitat, although this species is believed to be extirpated from sections of San Francisquito Creek where it had been previously documented (CDFG 2010). Avoidance and minimization measures would be enforced during construction to reduce potential impacts to the unarmored threespine stickleback habitat near construction areas. Suitable habitat for the unarmored threespine stickleback is located immediately south of where the Proposed Action would cross San Francisquito Creek. It is possible that this habitat may be affected by runoff from construction where construction is near slopes or where vehicles drive near the streambed. Avoidance and minimization measures would be enforced during construction to protect and minimize any impacts to this proposed critical habitat.

General practices that would reduce short-term and long-term effects to unarmored threespine stickleback and its habitat include GP-3, GP-5, GP-11, GP-12, GP-17, GP-19, GP-24, GP-34, GP-35, GP-38, GP-41, GP-42, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short-term or long-term effects to unarmored threespine stickleback and its habitat include HYD-01 (Use of Existing Water Crossings), HYD-02 (New Road Construction Over Waterways), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), and BIO-6 (Implement a Worker Environmental Awareness Program).

Mitigation Measures for Effects to Unarmored Threespine Stickleback

- HYD-1 Use of Existing Water Crossings.** This mitigation measure would require the Project to use existing access routes as available; to construct new roads by mowing or crushing vegetation to no less than four inches above grade; to keep new roads to a 12-foot maximum width; to use existing crossings at perennial streams, wetlands, and irrigation channels as feasible; and to restore new access roads that would not be used for ongoing maintenance. (Refer to the Mitigation Planning Section of the EIS/EIR [USFS/BLM/LADWP 2011b] for the full text of this mitigation measure)
- HYD-2 New Road Construction Over Waterways.** This mitigation measure would require roads to be built as near as possible to right angles to streams and washes if feasible; to install culverts where necessary; to minimize disturbance to vegetation and streambeds; to utilize dust control measures during construction; and to leave existing roads in a condition equal to or better than their preconstruction conditions. (Refer to the Mitigation Planning Section of the EIS/EIR [USFS/BLM/LADWP 2011b] for the full text of this mitigation measure)
- BIO-2 Prevent the spread of invasive weeds.** This mitigation measure would require LADWP to prepare and implement a weed control plan; remove weed seed sources from construction access routes; remove weed seed sources from assembly yards, tower pads, pull sites, landing zones, and spur roads; and use herbicides where necessary to control exotic weeds. (Refer to Table 4 for the full text of this mitigation measure)
- BIO-3 Incorporate riparian area avoidance and mitigation measures.** This mitigation measure would require LADWP seek USFS approval prior to any construction or habitat modification within RCAs; prepare an RCA Treatment Plan in consultation with the USFS; avoid impacts to RCAs to the extent feasible; restore all affected RCAs to their pre-construction conditions; and restore or preserve off-site habitat where permanent RCA impacts are unavoidable. (Refer to Table 4 for the full text of this mitigation measure)
- BIO-4 Provide restoration/compensation for affected jurisdictional areas.** This mitigation measure would require LADWP to avoid impacts to areas under USACE, RWQCB, USFS, or CDFG

jurisdiction to the extent feasible and to provide restoration/compensation where applicable. (Refer to Table 4 for the full text of this mitigation measure)

BIO-5 Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife. This mitigation measure would require LADWP to conduct preconstruction surveys for special-status species, provide a biological monitor where special-status sign or suitable habitat is identified, and to cover all open trenches or excavations to prevent entrapment of wildlife. (Refer to Table 4 for the full text of this mitigation measure)

BIO-6 Implement a Worker Environmental Awareness Program. This mitigation measure would require a qualified biologist to conduct Worker Environmental Awareness Program (WEAP) training for all crew members. (Refer to Table 4 for the full text of this mitigation measure)

Effects Determination

Based on the analysis provided, the BR RTP may affect, but is not likely to adversely affect, the unarmored threespine stickleback.

8.0 CUMULATIVE EFFECTS

Cumulative effects would result from incremental impacts of the Proposed Action when added to other past, present, and reasonably foreseeable future actions within the designated region of influence. Cumulative effects for biological resources apply to both plant and wildlife species and must take into account known distribution, availability of preferred habitat, designated critical habitat, local population size, and likely responses to effects for each species that is considered.

Potential cumulative impacts to the environment were addressed that could be associated with the implementation of the Project in conjunction with one or more past, present, or reasonably foreseeable future actions or projects. BLM's NEPA Handbook states that "cumulative impacts can be categorized as additive and interactive. An additive impact emerges from persistent additions from one kind of source whether through time or space. An interactive impact results from more than one kind of source." Cumulative impacts can result from individually minor, but collectively significant, actions taking place over a period of time.

Cumulative impacts are most likely to arise when a relationship exists between the Proposed Action and other actions that have, or are expected, to occur in a similar location or time period, or involve similar actions. Projects in close proximity to the Proposed Action would be expected to have more potential for cumulative impacts than those more geographically separated.

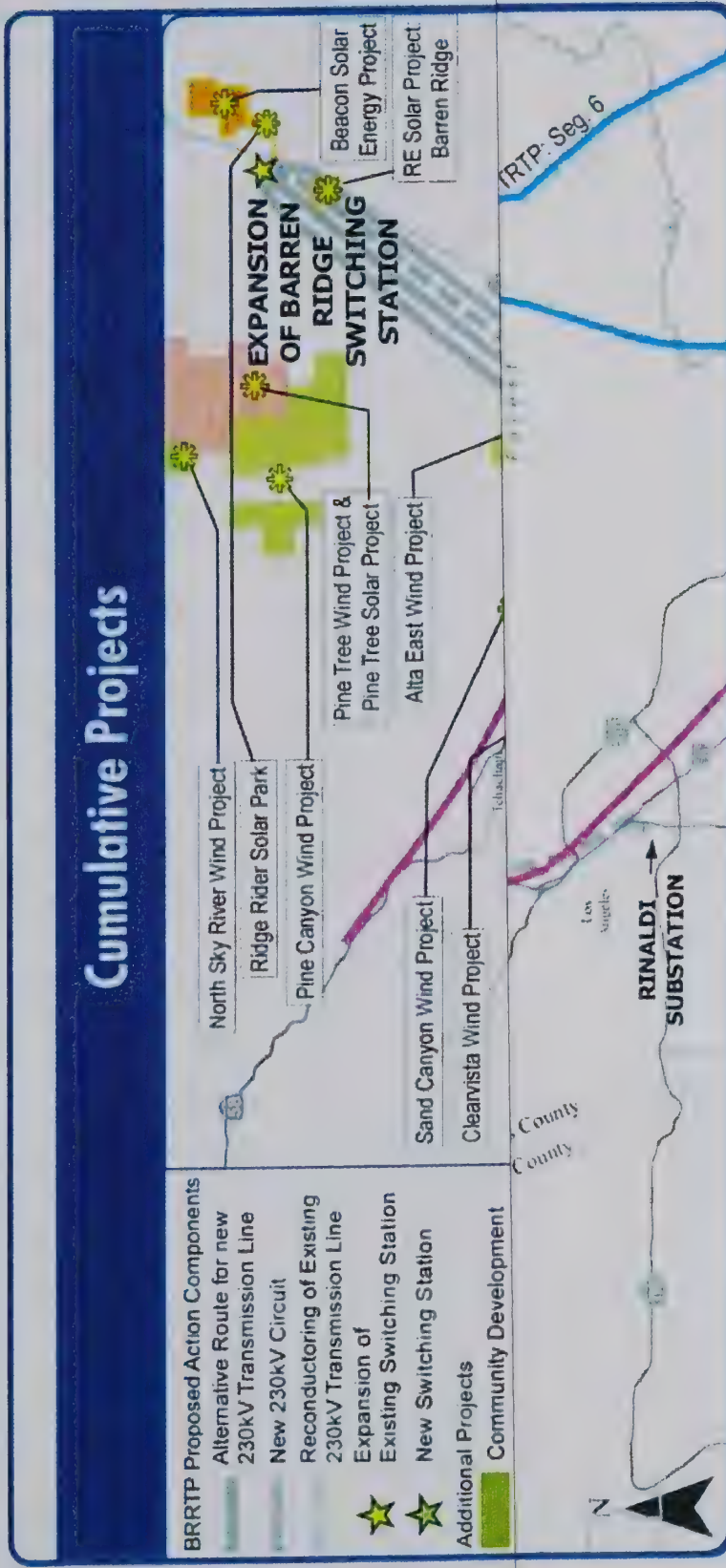
8.1 IMPACT AREA

The region of influence for BR RTP's biological cumulative effects is defined as any small project within five miles of the proposed segments, as well as any large projects in BR RTP's vicinity (e.g., solar development, wind development) that are farther than five miles from its Project area. This five-mile boundary is assumed to account for impacts to most plants' dispersion area and most animals' migration corridors or individual home ranges. In the case of the California condor, which will often fly very long distances while foraging, a twenty-mile region of influence was implemented.

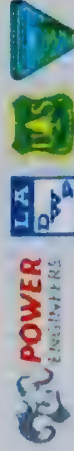
8.2 PRESENT AND REASONABLY FORESEEABLE ACTIONS

The Cumulative Projects map (Figure 7) illustrates the locations of the major cumulative projects in the BR RTP area. The list of projects include: 1) Electricity Transmission Projects; 2) Power Generation Projects; 3) Transportation and Public Facilities Projects; 4) Community Development Projects; 5) Recreation Projects; 6) Maintenance/Landscaping Projects; and 7) Local Development Projects.

FIGURE 7. CUMULATIVE PROJECTS



BARREN RIDGE RENEWABLE TRANSMISSION PROJECT



jurisdiction to the extent feasible and to provide restoration/compensation where applicable. (Refer to Table 4 for the full text of this mitigation measure)

BIO-5 Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife. This mitigation measure would require LADWP to conduct preconstruction surveys for special-status species, provide a biological monitor where special-status sign or suitable habitat is identified, and to cover all open trenches or excavations to prevent entrapment of wildlife. (Refer to Table 4 for the full text of this mitigation measure)

BIO-6 Implement a Worker Environmental Awareness Program. This mitigation measure would require a qualified biologist to conduct Worker Environmental Awareness Program (WEAP) training for all crew members. (Refer to Table 4 for the full text of this mitigation measure)

Effects Determination

Based on the analysis provided, the BRRTP may affect, but is not likely to adversely affect, the unarmored threespine stickleback.

8.0 CUMULATIVE EFFECTS

Cumulative effects would result from incremental impacts of the Proposed Action when added to other past, present, and reasonably foreseeable future actions within the designated region of influence. Cumulative effects for biological resources apply to both plant and wildlife species and must take into account known distribution, availability of preferred habitat, designated critical habitat, local population size, and likely responses to effects for each species that is considered.

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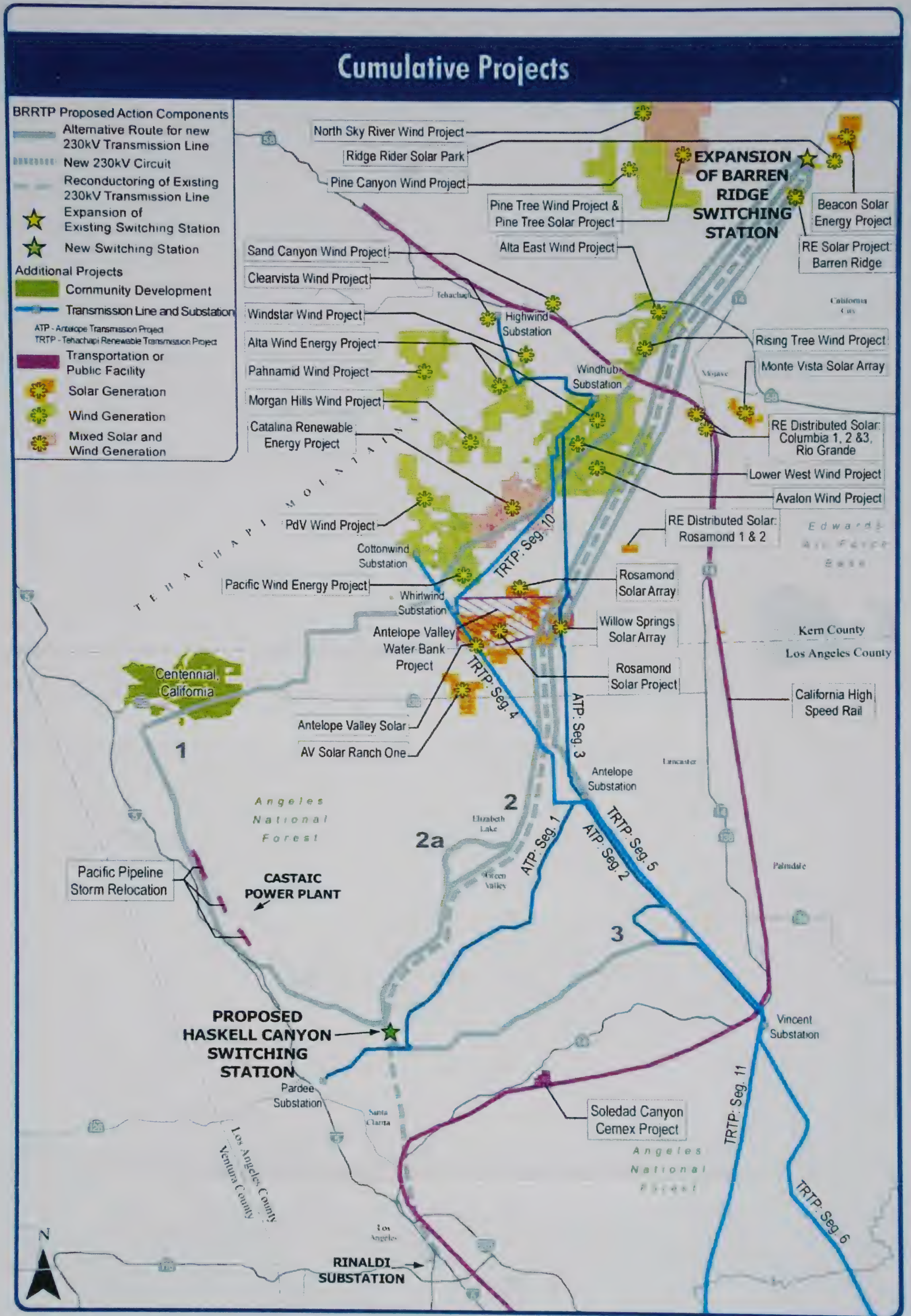
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FIGURE 7. CUMULATIVE PROJECTS



BARREN RIDGE RENEWABLE TRANSMISSION PROJECT



Numerous wind and solar generation projects are in various stages of planning and development within the Project vicinity. Additionally there is a pipeline relocation project in the ANF, a new master planned community on Tejon Ranch, various maintenance and land management projects within the ANF in the Project vicinity, and numerous local projects in Kern and Los Angeles Counties. Below are brief descriptions.

8.2.1 Generation Projects

Alta East Wind Project – is a proposal to generate up to 300 Megawatts (MW) of electricity from wind turbines on an approximately 3,660-acre site in Kern County.

Alta-Oak Creek Mojave Wind Energy Project – is a proposal by Terra-Gen Power to generate up to 800 MW of electricity from wind turbines on an approximately 9,300-acre site in unincorporated Kern County. Construction has begun on the first phase of the project.

Antelope Valley Solar Project – is a proposal by Renewable Resources Group to construct a 650 MW photovoltaic solar facility in unincorporated Kern County. The project consists of 5,400 acres.

AV Solar Ranch One – is a 230 MW solar generating project currently in development by NextLight Renewable Power, LLC. The project will interconnect to the electrical grid at SCE's planned Whirlwind substation, approximately 3.5 miles north of the project site. The project will be interconnected by construction of a 230 kV transmission line. NextLight filed an application for a conditional use permit with Los Angeles County in March 2009. The environmental review process is expected to be complete by mid-2010. AV Solar Ranch One should begin generating electricity in mid-2011 and be fully operational by the end of 2013.

Avalon Wind Project – is a proposal to generate up to 255 MW of electricity from wind turbines on an approximately 10,000-acre site in Kern County.

Beacon Solar Energy Project – is a concentrated solar electric generating facility proposed on an approximately 2,012-acre site in Kern County. The project will use parabolic trough solar thermal technology to produce electrical power using a steam turbine generator fed from a solar steam generator. The project will have a nominal electrical output of 250 MW and commercial operation is planned to commence by the third quarter of 2011.

Catalina Renewable Energy Project – is a proposal to generate up to 350 MW of electricity through a combination wind turbine and solar photovoltaic site on approximately 7,472 acres in Kern County.

Clearvista Wind Project – is a proposal by Pannon Design and Development to generate up to 40 MW of electricity from wind turbines on an approximately 226-acre site in Kern County.

Edwards Air Force Base Solar Project – is a proposal to construct a 500 MW solar facility on an approximately 3,288-acre site in Kern County.

Lower West Wind Energy Project – is a proposal to generate up to 14 MW of electricity from wind turbines on an approximately 185-acre site in Kern County.

Monte Vista Solar Array – is a proposal to construct a 126 MW photovoltaic solar facility on 1,040 acres in Kern County.

Morgan Hills Wind Project – is a proposal to generate up to 230 MW of electricity from wind turbines on an approximately 230-acre site in Kern County.

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Monte Vista Solar Array – is a proposal to construct a 126 MW photovoltaic solar facility on 1,040 acres in Kern County.

Morgan Hills Wind Project – is a proposal to generate up to 230 MW of electricity from wind turbines on an approximately 230-acre site in Kern County.

North Sky River Wind Project – is a proposal to generate up to 326 MW of electricity from wind turbines on a 1,330-acre site in Kern County.

Pacific Wind Energy Project – is a proposal to generate up to 151 MW of electricity from wind turbines on an approximately 8,300-acre site in Kern County.

Pahnamid Wind Energy Project – is a proposal to generate up to 411 MW of electricity from wind turbines on an approximately 7,106-acre site in Kern County.

Pacific Wind Energy Project – is a proposal by enXco Development Corporation to generate up to 250 MW of electricity from wind turbines on an approximately 8,300-acre site in unincorporated Kern County.

PdV Wind Energy Project – is a proposal by Power Partners Southwest, LLC to generate up to 300 MW of electricity from wind turbines on an approximately 5,820-acre site in Kern County.

Pine Canyon Wind Project – is a proposal by the Los Angeles Department of Water and Power to generate up to 150 MW on an approximately 12,000-acre site in Kern County.

Pine Tree Solar Project – is a proposal by the Los Angeles Department of Water and Power to construct a 10 MW photovoltaic solar facility in Kern County. The project consists of 75 acres.

Ridge Rider Solar Park Project – is a proposal by Global Real Estate Investment Partners, LLC to construct a 38 MW photovoltaic solar facility in unincorporated Kern County. The project consists of 475 acres.

Rising Tree Wind Farm – is a proposal to generate up to 234 MW of electricity from wind turbines on an approximately 2,745-acre site in Kern County.

Rosamond Solar Array Project – is a proposal by First Solar, Inc. to construct a 155 MW photovoltaic solar facility in unincorporated Kern County. The project consists of 1,177 acres.

Rosamond Solar Project – is a proposal to construct a 120 MW solar photovoltaic facility on a 960-acre site in Kern County.

Sand Canyon Wind Project – is a proposal to generate up to 40 MW of electricity from wind turbines on a 300-acre site in Kern County.

Willow Springs Solar Array Project – is a proposal by First Solar, Inc. to construct a 160 MW photovoltaic solar facility in unincorporated Kern County. The project consists of 1,402 acres.

Windstar Wind Energy Project – is a proposal to generate up to 65 MW of electricity from wind turbines on an approximately 1,007-acre site in Kern County.

TABLE 9. TRANSMISSION AND GENERATION PROJECTS WITHIN FIVE MILES OF THE PROPOSED ACTION

Project
Alta East Wind Project
Alta-Oak Creek Mojave Wind Energy Project
Antelope Transmission Project--Segment 3
Antelope Valley Solar Project

Project
AV Solar Ranch One
Avalon Wind Project
Beacon Solar Energy Project
Catalina Renewable Energy Project
Lower West Wind Project
Monte Vista Solar Array
RE Distributed Solar Project
Ridge Rider Solar Park Project
Rosamond Solar Array Project
Tehachapi Renewable Transmission Project --Segment 4
Willow Springs Solar Array Project

8.2.2 Transportation and Public Facilities

Pacific Pipeline Storm Relocation Project and Access Road Repairs – Pacific Pipeline is proposing to relocate several miles of crude oil pipeline to more stable ground within the ANF.

8.2.3 Community Development

Centennial, California – The proposed project site consists of 12,000 acres located one mile east of Interstate 5 (I-5) and adjacent to State Highway 138 in Los Angeles County. The project would include a specific plan and subdivision entitlements (i.e., tract maps and conditional use permits) for a master planned community. The specific plan proposes a maximum of 23,000 dwelling units and 14 million total square feet of non-residential development of employment areas (12,233,390 square feet) and retail serving centers (1,986,336 square feet), anticipated to be built over approximately 20 years, with build-out expected in 2030. If the project is approved by Los Angeles County, it is estimated that the non-residential development may generate approximately 31,000 jobs. The draft Specific Plan for the unincorporated community of Centennial was submitted to Los Angeles County in February 2003 and is currently being reviewed by the county.

8.2.4 Maintenance and Landscape Management Projects

Bouquet Canyon Road Realignment – Los Angeles County Department of Public Works is proposing to straighten some sections of Bouquet Canyon Road and to raise the road surface by approximately nine feet. A Memorandum of Understanding between ANF and Los Angeles County is currently under development to initiate the project (Forest Service Schedule of Proposed Actions for the Angeles National Forest).

San Francisquito Road Rehabilitation and Sediment Disposal Site – Los Angeles County Department of Public Works is proposing a road realignment and new bridge along San Francisquito Road within the ANF and to use eight acres of Forest land as a spoils site in support of construction activities. Public Scoping began in June 2007, and a decision was expected in September 2010 (Forest Service Schedule of Proposed Actions for the Angeles National Forest).

Old Ridge Route Storm Damage Repair – USFS is proposing to repair and provide maintenance to seven storm-damaged locations along the Old Ridge Route in ANF. A decision on the project is expected in late 2010 (Forest Service Schedule of Proposed Actions for the Angeles National Forest).

Livestock Grazing Allotments – BLM currently authorizes both cattle and sheep grazing on 11 grazing allotments in and around the project area. The livestock are authorized with 10 year permits/leases and

yearly authorizations. These allotments encompass over one half million acres of BLM-managed lands. The number of livestock grazed each year depends upon weather conditions.

Tule Ridge/South Portal Fuels Reduction Project – USFS proposes fuels reduction and re-establishment of a fuel break to provide protection to unincorporated community of Green Valley. The project would also enhance wildlife for mammals and birds (Forest Service Schedule of Proposed Actions for the Angeles National Forest).

Jupiter Fuelbreak Project – USFS proposes to re-establish an existing fuel break that begins southwest of the unincorporated community of Green Valley and travels east, bisecting Jupiter Mountain, before heading south to Bouquet Reservoir.

Santa Clara/Mojave River Rangers District Plantation Maintenance Project – The proposed project would consist of vegetation maintenance at 13 plantations located within the ANF in order to reduce wildfire risk, and improve wildlife habitat and the vitality of individual remaining trees. Proposed actions include removal of dead trees, thinning of live trees, pruning, removing weeds, and planting for reforestation where necessary. This action was approved by the District Ranger in January 2010 (Forest Service Schedule of Proposed Actions for the Angeles National Forest).

Lake Hughes Plantation Restoration Project – The proposed project would restore unauthorized off-highway vehicle trails at the Christian and Taylor Plantations located within the ANF in order to reduce soil erosion, the spread of weeds, destruction of native plants, soil compaction, and wildlife habitat loss. Proposed actions include recontouring and decompacting soils, reseeding with native species, and reinforcing check dams. The project was approved by the District Ranger in 2009 and scheduled for implementation in January 2010 (Forest Service Schedule of Proposed Actions for the Angeles National Forest).

8.2.5 Local Projects

Los Angeles County

The projects below are those in Los Angeles County which occur within five miles of the BRRTP and which were determined to have potential biological impacts. Because not every project has a formal name, they are listed below by their case numbers. Available documentation for each project below can be obtained from the LA County Department of Regional Planning website by using the case number (LA County Department of Regional Planning 2011).

Case 00-210 – The proposed project involves the construction of a new housing development south of Six Flags Magic Mountain called Entrada. The project would involve construction of 1,640 housing units, commercial development, a new school, a public park, public facilities and two private recreation centers, and open space areas. It would also involve improvements to local infrastructure. The total project area is 515 acres. The site contains an unnamed channel and several sensitive habitat types; 65 oak trees would be removed and 12 oaks would be encroached upon. There are also records of 25 special-status species being on-site or in the project vicinity, including the federal Endangered San Fernando Valley spineflower and the federal Candidate western yellow-billed cuckoo. The final determination of the Initial Study called for an Environmental Impact Report.

Case 01-154 – The proposed project involves the construction of a new mining operation and processing area on 25 acres of a 73-acre site. The processing area will require the construction of numerous permanent facilities, including a scale house, an office trailer, electrical generators, two water tanks, two above-ground fuel tanks, a crusher plant, and a screening plant. A detention pond, access road, and truck loading area are also proposed. The site includes chaparral, coastal sage scrub, and riparian habitat, including the Pacoima wash and its tributaries. There are also known oak trees and potentially suitable

habitat for slender-horned spinesflower and coastal California gnatcatcher. The final determination of the Initial Study called for an Environmental Impact Report.

Case 04-023 – The proposed project involves the improvement of an existing health retreat facility in Bouquet Canyon. Proposed improvements involve construction of three four-foot wide concrete walkways, an Arizona crossing, a secondary emergency access road with a bridge, a four-inch sewer line, widening the fire lane to 20 feet, demolishing portions of existing buildings, and conducting several aesthetic improvements. This project is expected to involve vegetation clearance and may involve impacts to Bouquet Creek, willow riparian scrub, oak trees, and the coast horned lizard (*Phrynosoma coronatum*). The final determination of the Initial Study called for a Mitigated Negative Declaration.

Case 04-089 – The proposed project involves alterations to an existing ranch and movie filming site. Proposed alterations include relocation of an existing residence out of the flood plain of Placerita Creek, relocation of the site's main entrance and driveway, and construction of a new detached restroom facility. Two blue-line streams, Placerita Creek and Heil Creek, are located on-site. The project would involve the removal of 14 oak trees and encroachment of five oak trees. A Mitigated Negative Declaration was drafted for this project.

Case R2007-01655 – The proposed project involves the construction of a new home on a 40-acre site. Construction includes a single-family residence, a second unit, multiple garages, an office/gym, a pool house, a gate house, and a workshop. The site contains a blue-line stream, southern willow scrub, coastal sage scrub, coast live oak woodland, chaparral, and western sycamore habitat, and lies within designated critical habitat of the coastal California gnatcatcher. There are nine special-status plants and thirteen special-status wildlife which would occur on the property. A total of 51 oak trees are proposed to be removed and an additional 109 to be encroached upon. The final determination of the Initial Study called for a Mitigated Negative Declaration.

Case TR066202 – The proposed project involves the construction of 31 new detached single-family condominiums on a 7.61-acre area. This project may affect nesting habitat for native bird species in the area, and the coastal California gnatcatcher is unlikely to occur on-site. The final determination of the Initial Study called for a Mitigated Negative Declaration.

Kern County

The projects below are those in Kern County which occur within five miles of the BRRTP—with one exception—and which were determined to have potential biological impacts. Because these projects did not have names or case numbers, they have been placed into groups of similar projects and are described according to project type below. Specific project inquiries can be directed to the Kern County Planning and Community Development Department (2009).

Generation and Communications – There are three proposed generation and communications projects in Kern County in the BRRTP vicinity. One of these is greater than five miles from the BRRTP centerline, but is included here because it involves the construction of ten 20 MW solar voltaic panels on an 820-acre area. This project is located approximately seven miles west of the Proposed Action. Another project located between Willow Springs and Rosamond proposes the construction of two 45-foot wind turbines. A proposed cellular communications tower is located 4.75 miles west of the Project area. Its disturbance footprint is unknown, but it may involve the placement of several equipment cabinets and other associated equipment along with the communications tower.

Mining and Excavation – There are four mining and excavation projects in the vicinity of the BRRTP in Kern County. These are existing operations which were recently submitted for renewal and/or modification. These operations are likely high traffic areas. The CNDDB has a 2006 record of a live tortoise being encountered within one mile of one of these sites (CDFG 2011).

Residential Development – There are three proposed apartment communities in the BRRTP vicinity in Kern County, all located on the outskirts of Mojave. One community, located on the northwestern side of Mojave, is a proposed 81-unit complex; the remaining two are adjacent to each other on the south end of town and are proposals for an 81-unit complex and a 50-unit complex. The CNDDDB has a record of a dead desert tortoise located just over two miles south of the latter two communities (CDFG 2011). All three communities are on undeveloped land, though they have development nearby.

Other Development – There are four projects in the BRRTP vicinity that consist of development that is not for housing. Two of these are churches, one located in Mojave in an area south of the airport and the other between Willow Springs and Rosamond. One project involves the addition of several storage tanks to an existing facility in Mojave; this project is 1.1 miles from a 2006 CNDDDB record of a dead desert tortoise (CDFG 2011). The last involves the addition of a 3,000-square foot assembly hall at an existing cemetery approximately four miles southwest of Willow Springs.

8.3 DIRECT AND INDIRECT IMPACTS SUMMARY

Both direct and indirect impacts are expected to occur to vegetation and wildlife. Direct impacts are defined as those that occur at the same time and place as BRRTP or the surrounding projects mentioned in Section 6.2. Indirect impacts are defined as those which could be caused by BRRTP or surrounding projects, but which would occur at a later time or occur at a distance farther removed from the direct construction corridor. While all of the direct and indirect impacts below could possibly occur due to BRRTP, not all may necessarily apply to each project listed in Section 6.2. However, any common direct or indirect impacts between BRRTP and any of the above-listed projects would exert cumulative effects of varying degrees on certain species or groups of species.

Direct Impacts

- Habitat loss, fragmentation, or degradation (short-term and long-term);
- Direct injury or mortality;
- Disturbance of special-status plants or animals (dust deposition on or crushing of plants, disturbance of an animal's daily activities or natural history); and
- Dispersal of local wildlife (including mortality of young for nesting wildlife).

Indirect Impacts

- Habitat degradation (spread of non-native plant species, soil compaction);
- Indirect injury or mortality (dispersal leading to increased predation risk and/or competition, ingestion of construction debris);
- Disturbance of special-status plants (loss of plant vigor due to dust or mud deposition);
- Reduction in water quality due to insufficient erosion control; and
- Avian collisions and/or electrocutions.

8.4 CUMULATIVE EFFECTS EVALUATION

Cumulative effects are evaluated below for each listed species that may be affected by BRRTP and surrounding projects.

Listed or Candidate Plant Species – There are four federal listed or candidate plant species that could occur within the Project area based on their habitat preferences, known ranges, and proximity of existing populations: Braunton's milk-vetch (*Astragalus brauntonii*; Endangered), Nevin's barberry (*Berberis nevinii*; Endangered), San Fernando Valley spineflower (*Chorizanthe parryi* var. *fernandina*; Candidate), and slender-horned spineflower (*Dodecahema leptoceras*; Endangered). No generation projects are expected to affect these species due to the general unsuitability of habitat in the project areas. San

Fernando Valley spineflower is known to be present on-site or in the vicinity of the proposed Entrada housing development south of Six Flags Magic Mountain, just under five miles from the BRRTP reconductoring area (LA County Department of Regional Planning 2011, case 00-210). There are five recorded populations in the CNDDDB within two miles of this project, all presumed extant, one of which is roughly in the center of the project site; a second population is either immediately adjacent to the boundaries or is on its western edge (CDFG 2011). It is unclear what measures would be taken to protect this species during the construction of this development, but the population(s) on-site may be removed. A proposed mining operation located south of the Angeles National Forest at the Pacoima wash is expected to impact potential habitat for the slender-horned spineflower, although no individuals are known to be on-site (LA County Department of Regional Planning 2011, case 01-154). There is a historical (1937) record in the CNDDDB from within the project area, but this sighting is considered “possibly extirpated” (CDFG 2011). The construction of this mining facility would likely impact suitable habitat for this species and may impact individuals should they in fact be extant, though no individuals were found in more recent surveys (CDFG 2011).

Proposed condominium construction in Mint Canyon is in the vicinity of a historical (1937 – different from above) slender-horned spineflower record that is also possibly extirpated (LA County Department of Regional Planning 2011, case TR066202). However, according to the CNDDDB, this canyon has not been sufficiently surveyed and this species may remain extant in its northern end (CDFG 2011). This species was not identified as a concern for the project’s construction, but could affect habitat should there still be suitable habitat on-site. No other known projects in the BRRTP vicinity specifically mention potential impacts to the four aforementioned listed or candidate species. It is possible that routine ANF maintenance or management projects may have an impact on suitable habitat for these species, and future, currently unknown projects in the BRRTP vicinity may impact individuals and/or habitat. The effects of all known and unknown projects that could affect these species in the BRRTP vicinity could combine with effects from the BRRTP.

General practices that would reduce short-term or long-term effects to special-status plant species or their habitat include GP-24, GP-25, GP-33, GP-35, GP-36, GP-41, GP-42, GP-43, GP-44, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to special-status plant species or their habitat include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of Existing Water Crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and protection measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-13 (Protect special-status plant species and their habitat). Cumulative effects on listed or candidate plant species between BRRTP and past, present, and foreseeable projects may be significant.

California Condor (*Gymnogyps californianus*) – The State and federal Endangered California condor is known to be present along what is known as BRRTP Segment K (part of the 230 kV reconductoring area) and has been known to fly over the project area at lesser frequency. GPS data is also available in the areas near to and north of the new 230 kV circuit. Based on this data supplied by the USFWS (2008b, 2009b), California condors are not expected to be nesting in the Project corridors and likely nest away from the proposed corridors. They may, however, use areas within the Project vicinity for foraging. Historical threats to California condor populations and individuals have included poisoning (lead, cyanide, and copper), DDT and DDE leading to thinned eggshells, and power line collisions (USFWS 1996). Projects in the BRRTP vicinity which could impact the California condor based on its known flyover areas include the Pacific Pipeline Storm Relocation and the planned construction of the community of Centennial, CA, located immediately south of the designated critical habitat that is present on Tejon Ranch (LA County Department of Regional Planning 2011, case 02-232).

There is also a proposed surface mining and processing operation just south of the Los Angeles River Ranger District of the Angeles National Forest in the San Fernando area (LA County Department of Regional Planning 2011, case 01-154) and a proposed housing development just north of the Santa Clara/Mojave Rivers Ranger District near Canyon Country (LA County Department of Regional Planning 2011, case R2007-01655). These are on the edges of heavy residential development and while unlikely to create strong additional disturbances due to the adjacent development, they will create additional visual disturbance. Human activity may restrict the activity and/or presence of California condors in these areas.

General practices that would reduce short-term or long-term effects to California condor include GP-8, GP-24, GP-34, GP-41, GP-42, GP-43, GP-48 and GP-49. Mitigation measures that would reduce short-term or long-term effects to California condor include HYD-1 (Use of Existing Water Crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds into previously uninfested areas in the designated construction right-of-way), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-7 (Impacts to raptors), BIO-11 (Reduce avian collisions with and electrocutions on transmission lines), and BIO-18 (Protect California condor). Formal consultation is being conducted with the USFWS to determine if any additional protection measures other than those mentioned above are necessary to protect California condors. Cumulative effects on California condor between BRRTP and past, present, and foreseeable projects in its vicinity would be unknown, due to limited data.

Coastal California Gnatcatcher (*Poliophtila californica californica*) – The federal Threatened coastal California gnatcatcher is known to be present on BRRTP's Segment K (part of the 230 kV reconductoring area) and in habitat patches adjacent to the new 230 kV circuit. Areas where it has been identified on Segment K include the Castaic Golf Course, an area which is bounded by residential communities and business parks in the City of Sylmar. The habitat around the 230 kV circuit is located in the vicinity of the Castaic Lake State Recreation Area. According to USFWS, historical factors which have contributed to the loss of habitat and decline of this species include urban and agricultural development, wildfires, grazing, and habitat type conversions (USFWS 2010d). At the time of its listing, the coastal California gnatcatcher had already lost 58 – 61% of its habitat in Orange, Riverside, and San Diego Counties, which were estimated to support approximately 99% of the gnatcatchers in 1993. Los Angeles County populations were estimated to be nearly extirpated at this time. Although several regional plans to protect suitable habitat are now in place, urban development and expansion remains a problem in the southern California area. Furthermore, because wildfires—an annual problem in Southern California—typically burn most or all of the aboveground biomass in coastal scrub habitats, not only can it exclude gnatcatchers from utilizing burned areas for anywhere from three to eight years following a fire until the plants regrow, but overly frequent fires can contribute to type conversions, typically resulting in the spread of nonnative grassland. Finally, grazing has been a historical contributor to habitat loss for this species, also resulting in habitat type conversions in areas of overgrazing.

A future planned mining operation and processing area would occur within coastal sage scrub, including habitat which may be suitable for coastal California gnatcatcher (LA County Department of Regional Planning 2011, case 01-154). Total vegetative impacts are expected to be 25 acres, although it is unknown how much of this is gnatcatcher habitat. There is a proposed housing development called Entrada located south of Six Flags Magic Mountain and west of I-5 (LA County Department of Regional Planning 2011, case 00-210). There is coastal sage scrub located on this site, but it is unknown at this time how much habitat would be affected. Future construction, maintenance, and human presence and recreation in areas of suitable habitat in the Project vicinity may negatively impact this species or its habitat, exerting cumulative effects with BRRTP.

General practices that would reduce short-term or long-term effects to coastal California gnatcatcher include GP-8, GP-24, GP-33, GP-34, GP-35, GP-41, GP-43, GP-48, and GP-49. Mitigation measures that

would reduce short-term and long-term effects to coastal California gnatcatcher include HYD-1 (Use of Existing Water Crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-8 (Avoid nesting season and limit disturbance of nesting birds [non-raptor species]), BIO-11 (Reduce avian collisions with and electrocutions on transmission lines), and BIO-15 (Protect coastal California gnatcatcher and its habitat). Cumulative effects on coastal California gnatcatcher between BRRTP and past, present, and foreseeable projects in its vicinity would be significant.

Southwestern Willow Flycatcher (*Empidonax traillii extimus*) – The State and federal Endangered southwestern willow flycatcher is not known to occur within the project area, although willow flycatchers of an undetermined subspecies have been identified on what is known as Segment G of the new 230 kV transmission line. Other suitable habitat was identified on Segment G of the proposed project during 2008 and 2009 surveys. It has also been observed as a migrant species around Bouquet Canyon, but it is unknown whether any breeding populations are present (Aspen 2006). Willow flycatchers have been observed in San Francisquito Canyon in surveys by Tierra Madre Consultants and PCR Services Corporation, but these were not identifiable to subspecies (Tierra Madre Consultants 1999, PCR Services Corporation 2001). Suitable habitat was identified in the Project area during 2008 surveys along the Proposed Action proposed corridor. Historical and current human disturbance, including recreation, development, infrastructure construction, channelization, grazing, nonnative plant proliferation (particularly from tamarisk), and water diversion and impoundment has contributed to the reduction and degradation of riparian habitat in southern California. At the time of listing, it was estimated that California had lost 91% of its wetland habitat (60 FR 10695 10715).

There are several planned local projects that have the potential to impact riparian habitat or native bird habitat; however, the suitability of these areas for this species is unknown at this time. These projects include the expansion of an existing treatment facility, the construction of a new mining facility, the construction of several new housing developments, and construction and reorganization of facilities on an existing film site. While some of these projects require Mitigated Negative Declarations and are assumed to have less than significant biological impacts with required mitigation, the effects of all projects together may create a cumulative impact on riparian habitat. Future construction, maintenance, public recreation, and streambed alteration in suitable habitat in the vicinity of BRRTP may negatively impact the habitat and/or individuals of this species if present. Future ANF maintenance to reduce non-native weeds in riparian areas would likely benefit this species' habitat depending on specific locations of treatments.

General practices that would reduce short-term or long-term effects to southwestern willow flycatcher and to riparian habitat include GP-3, GP-5, GP-8, GP-11, GP-12, GP-17, GP-19, GP-35, GP-38, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short-term or long-term effects to southwestern willow flycatcher include HYD-1 (Use of Existing Water Crossings), HYD-2 (New Road Construction Over Waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-8 (Avoid nesting season and limit disturbance of nesting birds [non-raptor species]), BIO-11 (Reduce avian collisions with and electrocutions on transmission lines), and BIO-14 (Protect western yellow-billed cuckoo, southwestern willow flycatcher, least Bell's vireo, and their habitat). Cumulative effects on southwestern willow flycatcher between BRRTP and past, present, and foreseeable projects in its vicinity would be unknown, due to limited data.

Least Bell's Vireo (*Vireo bellii pusillus*) – The State and federal Endangered least Bell's vireo is known to be present near the new 230 kV circuit near Castaic Lake and Castaic Lagoon and may also occur on the new 230 kV transmission line in areas of suitable habitat that were identified in 2008 surveys along the Proposed Action proposed corridor. Historical threats to the least Bell's vireo have included urbanization, grazing, agriculture, and proliferation of nonnative plants (USFWS 2006). As urbanization has increased and brought more humans into contact with riparian areas, livestock grazing and agriculture have decreased as these lands are converted and developed. While efforts have been underway to reduce the presence of giant reed (*Arundo donax*) within riparian areas, other exotic species such as tamarisk (*Tamarix* sp.) and perennial pepperweed (*Lepidium latifolium*) remain of concern. Future construction, maintenance, and public recreation in suitable habitat in the vicinity of BRRTP may negatively impact the habitat and/or individuals of this species if present.

There are several planned local projects that have the potential to impact riparian habitat or native bird habitat; however, the suitability of these areas for this species is unknown at this time. These projects include the expansion of an existing treatment facility, the construction of a new mining facility, the construction of several new housing developments, and construction and reorganization of facilities on an existing film site. While some of these projects require Mitigated Negative Declarations and are assumed to have less than significant biological impacts with required mitigation, the effects of all projects together may create a cumulative impact on riparian habitat. Future ANF maintenance to reduce non-native weeds in riparian areas would likely benefit this species' habitat depending on specific locations of treatments.

General practices that would reduce short-term or long-term effects to least Bell's vireo and to riparian habitat include GP-3, GP-5, GP-8, GP-11, GP-12, GP-17, GP-19, GP-35, GP-38, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short-term or long-term effects to least Bell's vireo include HYD-1 (Use of Existing Water Crossings), HYD-2 (New Road Construction Over Waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-8 (Avoid nesting season and limit disturbance of nesting birds [non-raptor species]), BIO-11 (Reduce avian collisions with and electrocutions on transmission lines), and BIO-14 (Protect western yellow-billed cuckoo, southwestern willow flycatcher, least Bell's vireo, and their habitat). Cumulative effects on least Bell's vireo between BRRTP and past, present, and foreseeable projects in its vicinity would be unknown, due to limited data.

Western Yellow-billed Cuckoo (*Coccyzus americanus occidentalis*) – The State Endangered, federal Candidate western yellow-billed cuckoo is not known to occur within the BRRTP area, although suitable habitat was identified in the Project area during 2008 surveys along the new 230 kV transmission line proposed corridor. Historical and current human disturbance, including recreation, development, and infrastructure construction, has contributed to the reduction and degradation of riparian habitat in southern California. Future construction, maintenance, and public recreation in suitable habitat in the vicinity of BRRTP may negatively impact the habitat and/or individuals of this species if present.

There are several planned local projects that have the potential to impact riparian habitat or native bird habitat; however, the suitability of these areas for this species is unknown at this time. These projects include the expansion of an existing treatment facility, the construction of a new mining facility, the construction of several new housing developments, and construction and reorganization of facilities on an existing film site. While some of these projects require Mitigated Negative Declarations and are assumed to have less than significant biological impacts with required mitigation, the effects of all projects together may create a cumulative impact on riparian habitat. This species is known to be present on-site or

in the vicinity of the proposed Entrada housing development south of Six Flags Magic Mountain (LA County Department of Regional Planning 2011, case 00-210). It is unclear if this is a historical or current record and where exactly it is located. Future ANF maintenance to reduce non-native weeds in riparian areas would likely benefit this species' habitat depending on specific locations of treatments.

General practices that would reduce short-term or long-term effects to western yellow-billed cuckoo and to riparian habitat include GP-3, GP-5, GP-8, GP-11, GP-12, GP-17, GP-19, GP-35, GP-38, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short-term or long-term effects to western yellow-billed cuckoo include HYD-1 (Use of Existing Water Crossings), HYD-2 (New Road Construction Over Waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-8 (Avoid nesting season and limit disturbance of nesting birds [non-raptor species]), BIO-11 (Reduce avian collisions with and electrocutions on transmission lines), and BIO-14 (Protect western yellow-billed cuckoo, southwestern willow flycatcher, least Bell's vireo, and their habitat). Cumulative effects on western yellow-billed cuckoo between BR RTP and past, present, and foreseeable projects in its vicinity would be unknown, due to limited data.

Desert Tortoise (*Gopherus agassizii*) – The State and federal Threatened desert tortoise is known to be present in the northern sections of the new 230 kV transmission line. Historical threats to the desert tortoise have included urbanization, which includes a 17.4% increase in human populations in the California counties known to contain desert tortoises (11.1% in Los Angeles and Kern Counties), expansion of infrastructure, recreation, nonnative plant proliferation, wildfires, livestock grazing, agriculture, energy and mineral development, construction of landfills, military operations, utility corridors, and vandalism (USFWS 2010c). It is estimated that in desert areas human-related impacts to desert ecosystems may take from 50 to 300 years to fully recover, or may never recover (Lovich and Bainbridge 1999, cited in USFWS 2010c). Roads in desert areas have strongly contributed to habitat fragmentation, habitat degradation (especially through spread of nonnative plants), and direct injury or mortality of desert tortoises. It estimated that in 2008 there were 12,956 kilometers of paved roads and 1,837 kilometers of trails just within desert tortoise critical habitat areas (USFWS 2010c). In California and Nevada 80% of desert tortoise kills have been found along utility corridors, of which there are 1,634 kilometers totaling 469,391 acres of disturbance within desert tortoise critical habitat areas.

Present or future generation projects in the BR RTP vicinity which may cumulatively affect this species include the Alta Wind Energy Center: Alta-Oak Creek Mojave Project, Antelope Valley Solar Project, AV Solar Ranch One, Beacon Solar Energy Project, Pacific Wind Energy Project, PdV Wind Energy Project, Pine Canyon Wind Project, Pine Tree Solar Project, Ridge Rider Solar Park Project, Rosamond Solar Array, Willow Springs Solar Array Project, and Windstar Wind Energy Project. Biological resource documents are not available for all of these projects. The Beacon Solar Energy Project identifies several project mitigation measures for desert tortoise, including a measure for a desert tortoise translocation plan, a measure for potential injury or fatality due to project construction or operation, and a statement of 115 acres of habitat to be acquired in mitigation for desert tortoise habitat loss (CEC 2010). Protocol desert tortoise surveys conducted for Alta-Oak Creek located two individual tortoises, scattered desert tortoise sign, and 8,436 acres of suitable habitat within the project area (Kern County 2009). The project is expected to have impacts to desert tortoise that could include mortality by vehicle collision, habitat loss and degradation, increased predation, and burrow crushing.

Within the project area for the PdV Wind Energy Project, the desert tortoise was determined by literature review, consultation, and surveys to be absent (Kern County 2007). While there are 5,555 acres of suitable desert tortoise habitat on the project site, it is expected that only approximately 276.8 acres will

be affected, leaving over 95% of the project area with habitat. No biological resource documents are publically available for any other of the aforementioned projects, but because they are all in the same general area as the above-described projects, they are likely to also possess suitable habitat for the desert tortoise. Because these projects will require ground to be cleared, there is potentially a very large amount of habitat that will be removed or degraded by construction of these various projects. There are additionally over 100 applications for renewable energy projects on file in the state of California (USFWS 2010c). Additional local projects have been proposed within five miles of the Proposed Action, including continuation of mining operations, construction of apartment complexes, and construction of other facilities (e.g., a proposal to build a new church) (Kern County Planning and Community Development Department 2009).

There are several CNDDDB records of desert tortoise along the desert portion of the Proposed Action (CDFG 2011). Three of these are within the first two northern linear miles of the Project, but two are nearby other local proposed projects, one near including existing mining facilities near Tehachapi Willow-Springs Road and Backus Road and one within 2.25 miles of two proposed apartment communities and a proposed facilities expansion in the city of Mojave. Because both of the latter two records are located south of the aforementioned project areas, rather than north where there is less disturbance, tortoises may continue to live in these general areas and there may be some impacts to tortoises or their habitat despite the otherwise disturbed and developed nature of the areas. Loss of individuals or habitat in these areas will exert a cumulative effect on desert tortoise by reducing the local population size or removing suitable habitat, also acting cumulatively with various historical transmission, generation, or residential impacts. The intensity of the cumulative effect is increased due to the fact that these projects will be ongoing for several years. Because this species can take up to 20 years to reach sexual maturity and has low reproductive rates (USFWS 2008a), any actions that stress, harm, or kill desert tortoises can be considered significant.

General practices that would reduce short-term or long-term effects to desert tortoise include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to desert tortoise include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of Existing Water Crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-23 (Protect desert tortoise and habitat loss). Cumulative effects on desert tortoise between BRRTP and past, present, and foreseeable projects in its vicinity would be significant.

California Red-legged Frog (*Rana draytonii*) – The federal Threatened California red-legged frog is known to occur near the new 230 kV transmission line in San Francisquito Creek in what is known as the St. Francis Dam reach. Direct impacts to individual animals are unlikely due to the distance of the corridor from the known population and the steep terrain in between. However, suitable habitat was located directly under the proposed Proposed Action ROW along City Highline Road in the ANF. While there are no known individuals in these locations, these areas may undergo habitat loss or degradation due to construction activity, as some transmission line spur roads would pass directly through them. A potential California red-legged frog tadpole was identified in San Francisquito Creek under what is known as Segment J during BRRTP special-status amphibian surveys. However, this was an isolated find and, due to the unsuitability of habitat in the area that this tadpole was found, it is possible that the tadpole washed downstream from the occupied habitat during a heavy rain event. There are no additional projects in the vicinity of this sighting that affected or could affect this area.

Historical and current threats to the California red-legged frog include urbanization, predation by bullfrogs and other nonnative aquatic species, agriculture, impoundments, channelization, mining, livestock grazing, recreation, and timber harvesting (USFWS 2002b). While there were historically over

80 records of California red-legged frog populations in southern California south of the Tehachapi Mountains, there are currently only a few known extant populations, several of which are on the Angeles National Forest (USFWS 2002b). Future construction, maintenance, and public recreation in suitable habitat in the vicinity of BRRTP may negatively impact the habitat and/or individuals if present. Future ANF maintenance to reduce non-native weeds in riparian areas would likely benefit this species' habitat depending on specific locations of treatments.

General practices that would reduce short-term and long-term effects to California red-legged frog and its habitat include GP-3, GP-5, GP-11, GP-12, GP-17, GP-19, GP-24, GP-34, GP-35, GP-38, GP-41, GP-42, GP-43, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short-term or long-term effects to California red-legged frog and its habitat include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of Existing Water Crossings), HYD-2 (New Road Construction Over Waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-24 (Protect arroyo toad and California red-legged frog). Cumulative effects on California red-legged frog between BRRTP and past, present, and foreseeable projects in its vicinity would not be significant.

Arroyo Toad (*Anaxyrus californicus*) – The federal Endangered arroyo toad is only known to occur near the new 230 kV circuit, although due to the presence of suitable habitat, it may occur elsewhere in the proposed ROW. There is a known breeding population of arroyo toads located in Castaic Creek north of the northern terminus of the new 230 kV circuit, which ends at Castaic Power Plant. Habitat degradation is possible in Charlie Canyon, where there is a sandy streambed immediately south of ANF that is crossed numerous times by Charlie Canyon Road, which serves as an access road to the existing transmission lines. This streambed contains marginal habitat for this species. From a historical perspective, construction and utilization of dams, reservoirs, roads, and recreational areas—particularly campgrounds—combined with agriculture and increasing urbanization from circa 1920 to 1980 devastated arroyo toad habitat and individuals, leading to its listing in 1994 (USFWS 2009b). Within the 22 river basins where arroyo toads are known to occur, there are 25 dams present; only two of these rivers do not have any dams. Dam construction has in many cases resulted in inundation of upstream habitat and reduced flow to downstream habitat, making conditions marginal or unsuitable for arroyo toads.

Mining and agriculture operations have resulted in the deposition or removal of sediment from streambeds, disrupting stream flows and degrading habitat, while urbanization and recreation has resulted in habitat loss, nonnative weed proliferation, and direct injury or mortality of toads due to crushing on roads. Livestock grazing in arroyo toad habitat has contributed to toad mortality by trampling, loss of stream habitat, increased sedimentation, and increased water temperatures due to loss of streamside habitat. In more recent years since the species was listed, greater efforts have been made to reduce the impacts of these actions, including modifying dam operations to reduce streambed impacts, closing recreational trails and sites in arroyo toad habitat, refining protection measures implemented during livestock grazing, and revising forest land management plans. In the foreseeable future, west and northwest of the new 230 kV circuit is the planned Pacific Pipeline Storm Relocation, which may affect some arroyo toad habitat should the relocation happen to be within suitable habitat, but because of the lack of known occurrences in the area is unlikely to affect any arroyo toad individuals. Within the Project area, suitable habitat for the arroyo toad is located in San Francisquito Creek and as well as in drainages that pass under or adjacent to the proposed ROW. Various individual maintenance and management projects within the ANF may impact habitat but based on known locations of arroyo toads in the Project vicinity are unlikely to impact individuals.

General practices that would reduce short-term and long-term effects to arroyo toad and its habitat include GP-3, GP-5, GP-11, GP-12, GP-17, GP-19, GP-24, GP-34, GP-35, GP-38, GP-41, GP-42, GP-43, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short-term or long-term effects to arroyo toad and its habitat include AIR-2a (Implement construction fugitive dust control plan), HYD-01, (Use of Existing Water Crossings), HYD-02 New Road Construction Over Waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-24 (Protect arroyo toad and California red-legged frog). Cumulative effects on arroyo toad between BRRTP and past, present, and foreseeable projects in its vicinity would not be significant if properly mitigated.

Unarmored Threespine Stickleback (*Gasterosteus aculeatus williamsoni*) – The State and federal Endangered unarmored threespine stickleback has been observed in the last several years in Bouquet Creek, east of the new 230 kV transmission line. There was previously a population in San Francisquito Creek near Segment G, but it has been determined to have been extirpated after 2005 flooding (CDFG 2010). Historical losses to unarmored threespine stickleback and its habitat have occurred from channelization, urbanization, agriculture, oxygen reduction, groundwater removal, nonnative weed proliferation (especially *Arundo donax*), recreation, hazardous materials spills, and the addition or impoundment of water into streambeds (USFWS 2009c). Urbanization near creeks occupied by unarmored threespine stickleback has historically contributed to their loss, and this is expected to continue to be a concern in the future with activities such as a proposal by the Newhall Land and Farming Company to develop approximately 12,000 acres of upland habitat adjacent to areas of the Santa Clara River occupied by this species (USFWS 2009c).

Future foreseeable construction projects include a proposal to raise and realign Bouquet Canyon Road which may affect the habitat or population of unarmored threespine stickleback present in this area; however, no project details are currently known (ANF Wildlife Biologist Nathan Sill, personal communication, 7/9/2010). Future construction actions, maintenance, and public recreation may continue to affect suitable habitat for this species within San Francisquito and Bouquet Canyons or possibly affect individuals within Bouquet Canyon.

General practices that would reduce short-term and long-term effects to unarmored threespine stickleback and its habitat include GP-3, GP-5, GP-11, GP-12, GP-17, GP-19, GP-24, GP-34, GP-35, GP-38, GP-41, GP-42, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short-term or long-term effects to unarmored threespine stickleback and its habitat include HYD-01 Use of Existing Water Crossings), HYD-02 (New Road Construction Over Waterways), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), and BIO-6 (Implement a Worker Environmental Awareness Program). Cumulative effects on unarmored threespine stickleback between BRRTP and past, present, and foreseeable projects in its vicinity would not be significant if properly mitigated.

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10.0 ACRONYMS AND ABBREVIATIONS

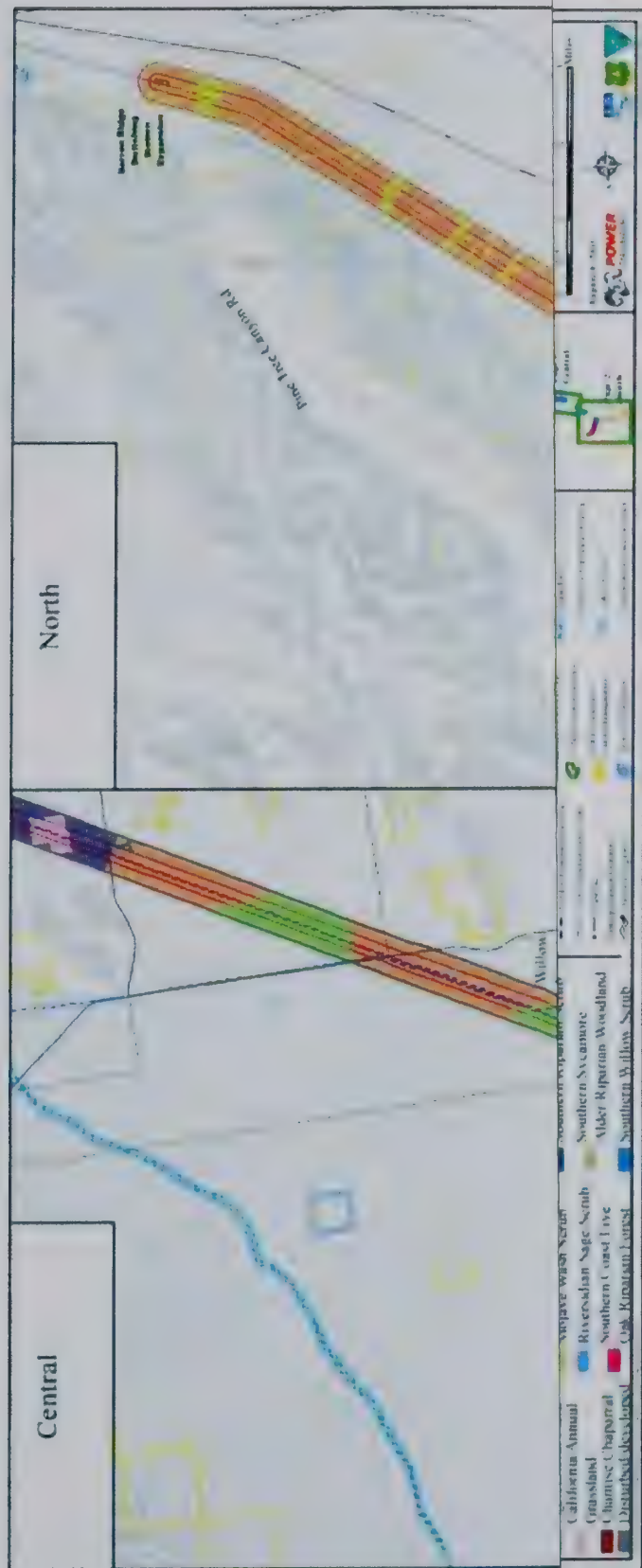
AC	Alternating Current
ACSS/AW	aluminum conductor steel supported/aluminum-clad steel wire
ACSS/TW/HS	aluminum conductor steel supported/trapezoidal wires/high strength
ANF	Angeles National Forest
APLIC	Avian Power Line Interaction Committee
BA	Biological Assessment
BLM	Bureau of Land Management
BMP	Best Management Practices
BR-RIN	Barren Ridge-Rinaldi Transmission Line
BRRTTP	Barren Ridge Renewable Transmission Project
CDFG	California Department of Fish and Game
CDPR	California Department of Pesticide Regulation
CDNPA	California Desert Native Plants Act
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CNDDDB	California Natural Diversity Database
CNPPA	California Native Plant Protection Act
CNPS	California Native Plant Society
COM	Construction, Operation, and Maintenance Plan
CSC	California Species of Special Concern
CWA	Clean Water Act
DBH	Diameter at breast height
DEIS	Draft Environmental Impact Statement
EPA	Environmental Protection Agency
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
ESA	Endangered Species Act
GAP	Gap Analysis Program
GIS	Geographic Information System
GPS	Global Positioning System
kcmil	Thousand circular mil (formerly MCM)
kV	Kilovolt
LADWP	Los Angeles Department of Water and Power
LMP	Land Management Plan
MBTA	Migratory Bird Treaty Act
MIS	Management Indicator Species
MW	Megawatt
MWh	Megawatt-hour
NAIP	National Agriculture Imagery Program
NEPA	National Environmental Policy Act
NERC	North American Electrical Reliability Council
NFS	National Forest System
NFMA	National Forest Land Management Act
NPS	National Park Service
PCA	Pest Control Advisor
PDCI	Pacific Direct Current Intertie
POD	Plan of Development
POWER	POWER Engineers, Inc.

PP2	Power Plant 2
PRC	Public Resources Code
RCA	Riparian Conservation Area
ROD	Record of Decision (NEPA)
ROW	Right-of-Way
RPS	Renewable Portfolio Standard
SCE	Southern California Edison
SVL	Snout – Vent Length
TRTP	Tehachapi Renewable Transmission Project
RWQCB	Regional Water Quality Control Board
SEA	Significant Ecological Area
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USDI	United States Department of the Interior
USFS	U.S. Department of Agriculture, Forest Service
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
WEAP	Worker Environmental Awareness Program
WMP	West Mojave Plan

APPENDIX A – NEW 230 kV TRANSMISSION LINE VEGETATION MAPS

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BARREN RIDGE RENEWABLE TRANSMISSION PROJECT BIOLOGICAL ASSESSMENT

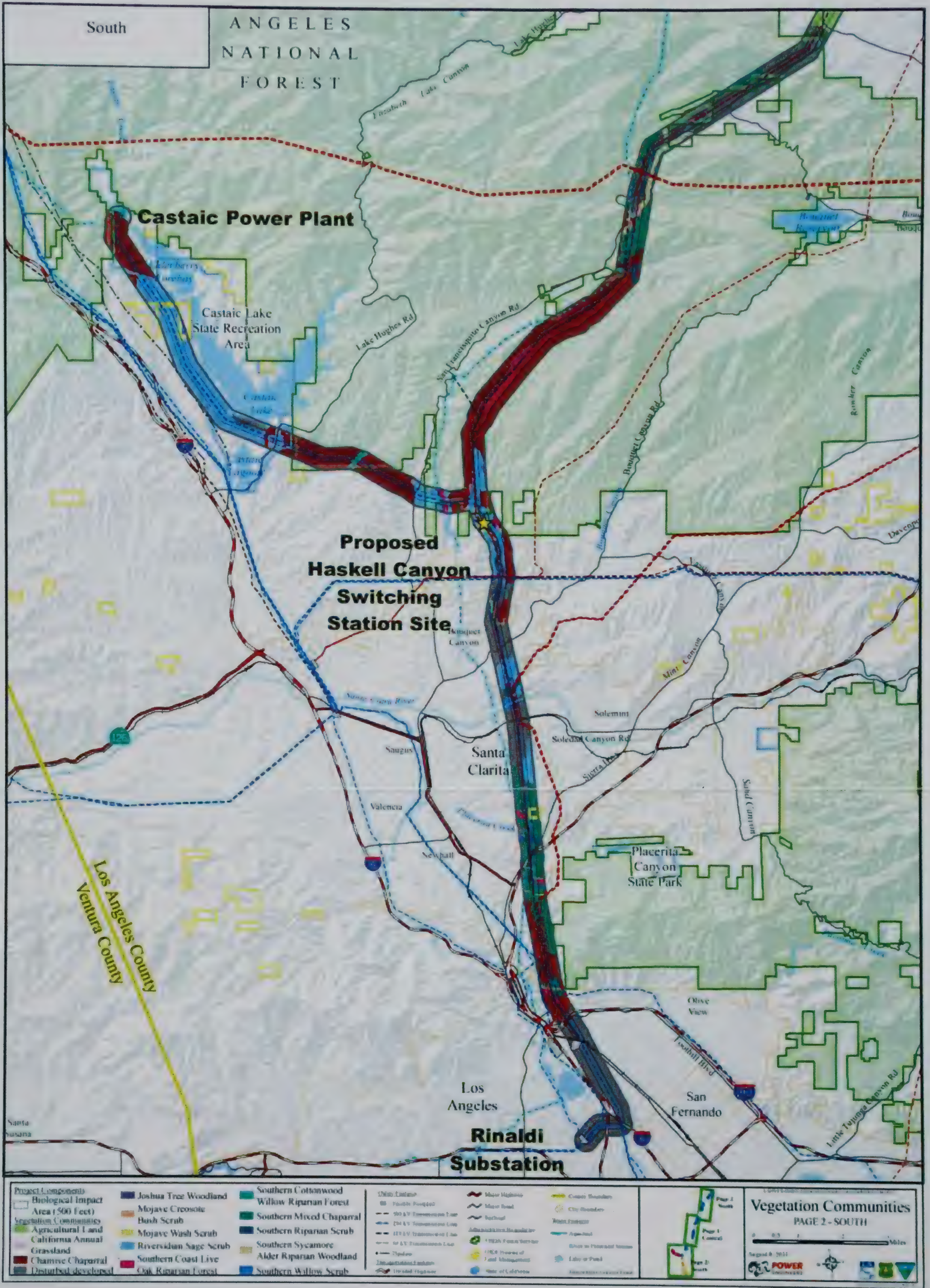


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APPENDIX B – BARREN RIDGE SWITCHING STATION VEGETATION MAP



APPENDIX B – BARREN RIDGE SWITCHING STATION VEGETATION MAP



APPENDIX C – HASKELL CANYON SWITCHING STATION VEGETATION MAP

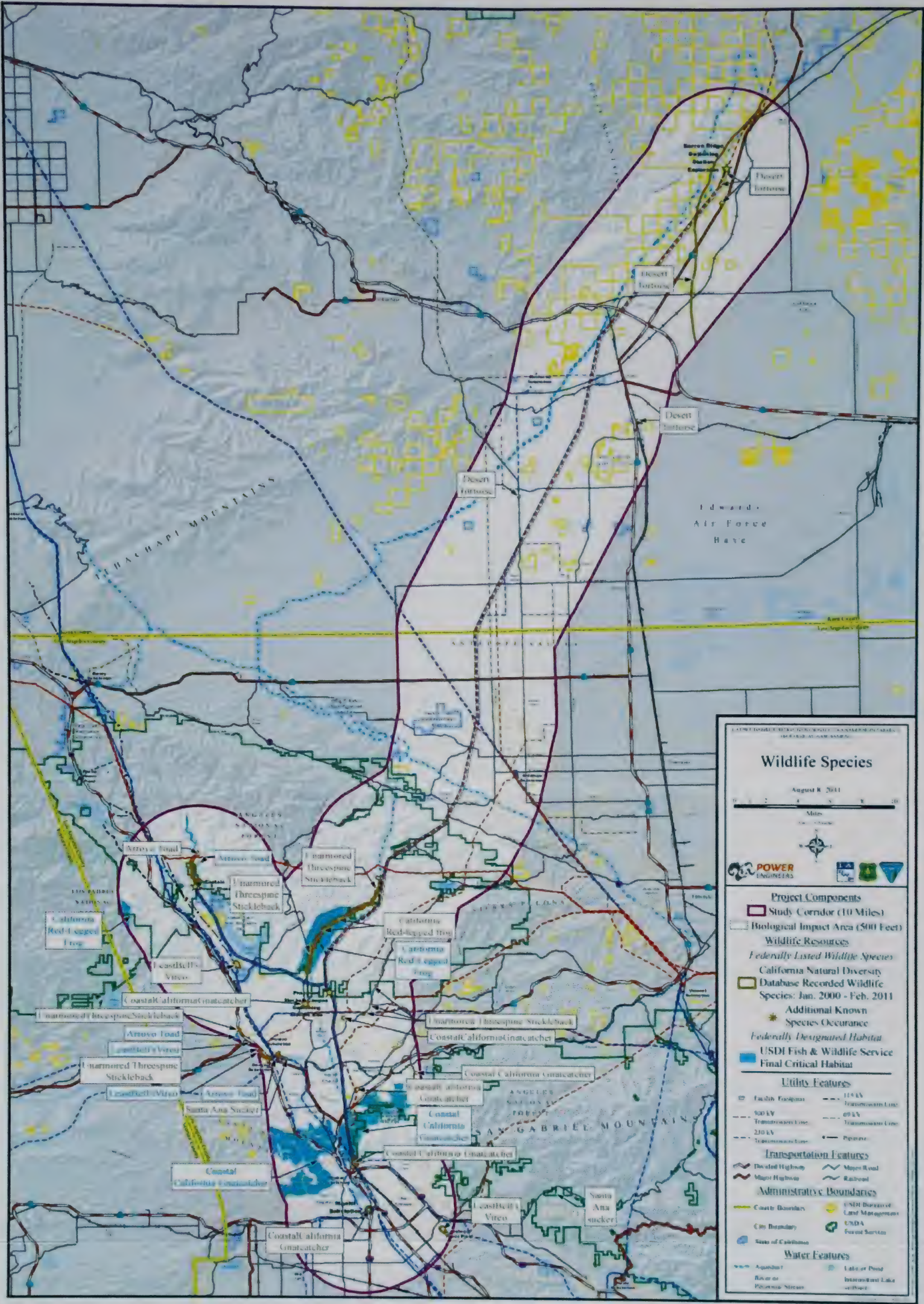


APPENDIX D – WILDLIFE RESOURCE PROJECT AREA MAP

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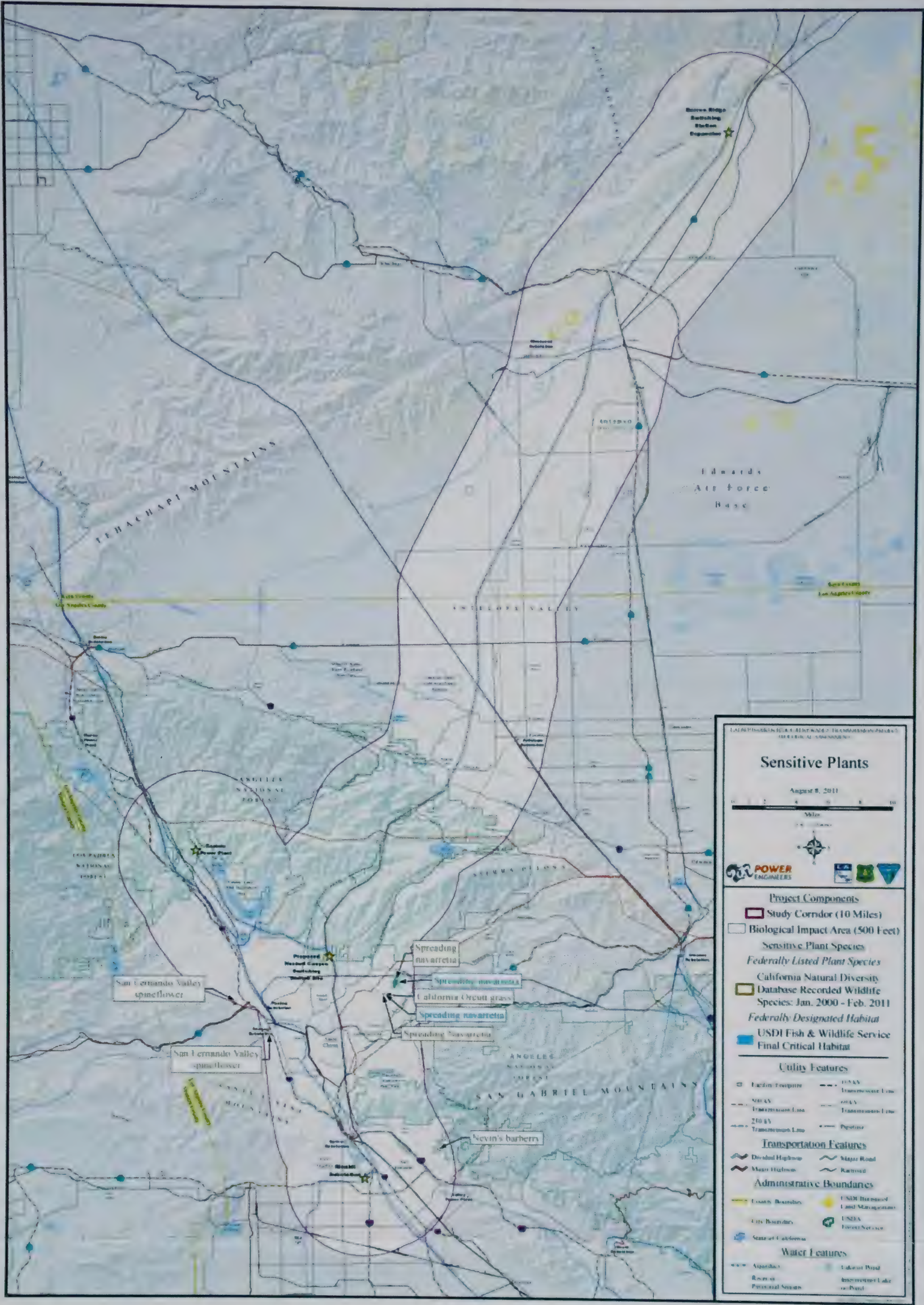
APPENDIX E – BOTANICAL RESOURCES PROJECT AREA MAP

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APPENDIX E – BOTANICAL RESOURCES PROJECT AREA MAP

BARREN RIDGE RENEWABLE TRANSMISSION PROJECT
BIOLOGICAL ASSESSMENT





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APPENDIX F – DETAILED CONSTRUCTION, OPERATION AND MAINTENANCE PROCESS

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APPENDIX F – DETAILED CONSTRUCTION, OPERATION AND MAINTENANCE PROCESS

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BARREN RIDGE RENEWABLE TRANSMISSION PROJECT

**Detailed Construction, Operations
and Maintenance Process**



BRRTP CONSTRUCTION, OPERATION AND MAINTENANCE

1.0 230 KV DOUBLE-CIRCUIT TRANSMISSION LINE

1.1 CONSTRUCTION SEQUENCE

Construction of a transmission line involves the following general sequence of events: surveying the centerline; identifying and constructing access roads; clearing right-of-way and tower sites (including construction yards and batch plants); installing foundations; assembling and erecting the towers; clearing, pulling, tensioning, and splicing sites; installing ground wires and conductors; installing counterpoise; switching station tie in; and cleanup and site reclamation. Various phases of construction would occur at different locations throughout the construction process for the Barren Ridge Renewable Transmission Project (BRRTP). This would require several contractors operating at the same time and in different locations.

The following section describes the construction components necessary for the assembly and installation of the proposed double-circuit transmission line. The description of transmission line construction sequencing and estimates for construction sites would also be relevant for the additional transmission line construction activities associated with the installation of the Castaic-Haskell Canyon #4 circuit on existing structures, and the reconductoring of the Barren Ridge – Rinaldi (BR-RIN) transmission line between the Barren Ridge Switching Station and the Rinaldi Substation.

1.1.1 Surveying Activities

The Los Angeles Department of Water and Power (LADWP) must first obtain survey permits for the portion of the Project crossing federal lands managed by the U.S. Department of Agriculture, Forest Service (USFS) and the U.S. Department of the Interior, Bureau of Land Management (BLM), and rights-of-entry for private lands. This would include the issuance of a 50-year term Special Use Permit to LADWP by the USFS and a 30-year term (renewable) Right-of-Way Grant issued by the BLM. For survey on affected private lands, LADWP would need to negotiate rights-of-entry with the local landowners. Once survey permits are obtained, construction survey work would consist of locating the centerline, tower center hubs, ROW boundaries, and tower access roads, some of which would be located outside of the ROW boundaries. Whenever possible, location of the ROW and Project facilities would be laid out to avoid identified sensitive resources. All of these activities would begin approximately one year prior to the start of construction. Cultural resources and necessary additional threatened and endangered species intensive surveys would be conducted once the survey of the centerline and access roads is completed and clearly marked.

Necessary pre-construction geotechnical investigations would include geological field mapping of each tower site, and borings by drill rig for soil sampling and bedrock corings to determine soil densities and bedrock strength. Test locations would include angle points between the Barren Ridge Switching Station and the Angeles National Forest (ANF), and five to ten locations along the selected alignment within the ANF. Seismic analysis of tower sites for slope stability would also be necessary in mountainous areas of the ANF. Existing roads would be used as much as possible, but some new roads could be required.

1.1.2 Preconstruction Weed Removal

LADWP/ANF/BLM shall prepare and implement a comprehensive, adaptive Weed Control Plan on NFS/BLM lands for pre-construction and construction invasive weed abatement. A pre-construction weed inventory shall be conducted by surveying all areas subject to ground-disturbing activity, including, but not limited to, tower pad preparation and construction areas, tower removal sites, pulling and tensioning

sites, assembly yards, and areas subject to grading for new or improved access and spur roads. In areas subject to ground disturbance, weed infestations shall be treated prior to construction according to control methods and practices for invasive weed populations designed in consultation with the USFS/BLM. The Weed Control Plan shall be updated and utilized for eradication and monitoring post construction. Weed control treatments shall include all legally permitted herbicide, manual, and mechanical methods applied with the authorization of the USFS/BLM. The application of herbicides shall be in compliance with all state and federal laws and regulations under the prescription of a Pest Control Advisor (PCA), where concurrence has been provided by the USFS/BLM, and implemented by a Licensed Qualified Applicator. Herbicides shall not be applied during or within 24 hours of a scheduled rain event. Herbicides shall not be used within Riparian Conservation Areas (RCAs) on the ANF without approval of the USFS. In riparian areas, only water-safe herbicides shall be used. Herbicides shall not be applied when wind velocities exceed six miles per hour. Where manual and/or mechanical methods are used, disposal of the plant debris will follow the regulations set by the USFS/BLM. The timing of the weed control treatment shall be determined for each plant species in consultation with the USFS/BLM (on NFS/BLM lands, respectively) with the goal of controlling populations before they start producing seeds.

1.1.3 Construction of Access Roads

The construction, operation, and maintenance of the proposed transmission line would require that heavy vehicles access tower sites along the right-of-way. Where new access roads are required, they would be constructed to support the weight of these vehicles and would typically be 16 feet wide, consisting of a 14-foot driving surface with a side drainage system between one and two feet in width. Permanent roads would be constructed where necessary for operation or maintenance, or where it is required by the landowner or land managing agency. Road standards would be addressed specifically in the Construction, Operation, and Maintenance Plan (COM Plan) and the Plan of Development (POD) during the engineering phase of the Project, and prior to a Notice to Proceed from the USFS and BLM.

Dependent upon final design and mitigation, some temporary access roads may be constructed as part of the Project. These would typically be 16 foot wide roads, but would typically have no improved ditch drainage systems. Most temporary roads would be constructed by crushing vegetation. In some areas, material and topsoil from the temporary roads would be bladed to one or both sides to facilitate rehabilitation. Following construction, bladed material can be re-spread across the disturbed road section. Seeds and roots contained within the re-spread topsoil layer normally provide a natural source for new growth.

Existing paved and unpaved highways and roads would be used where possible. Roads along existing utility corridors would also be used where possible to minimize new access road construction. In locations where existing roads can be used that are located in close proximity to the proposed centerline of the transmission line, only spur roads to the tower sites would be required. New access roads and spur roads would likely be constructed into the right-of-way where existing roads do not exist. Table 1 lists the estimated ground disturbance of access and spur roads based on terrain.

TABLE 1. ACCESS AND SPUR ROAD GROUND DISTURBANCE ESTIMATES

Ground Disturbance Categories	Access Roads		Spur Roads (average width 16 feet)	
	Average Miles of Roads Per Mile of Transmission Line	Average Acres of Disturbance Per Mile of Transmission Line*	Average Miles of Roads Per Mile of Transmission Line	Average Acres of Disturbance Per Mile of Transmission Line
1. Existing roads or agricultural land; no widening anticipated	n/a	n/a	0.3	0.6
2. Existing 8 ft wide roads that require an additional 8 ft of widening	1.0 to 2.5	Permanent 0.9 to 2.4	0.3	0.6
3. Construct new road on flat terrain (0-10%)	1.0 to 2.5	Permanent 1.9 to 4.8	0.3	0.6
4. Construct new road on sloping terrain (10-20%) ¹	2.5 to 4.0	Temporary 7.3 to 11.6 Permanent 4.8 to 7.7	0.5	1.0
5. Construct new road on steep terrain (20-30%) ^{1, 2}	4.0 to 6.0	Temporary 23.3 to 34.9 Permanent 7.7 to 11.6	0.8	1.6
6. Construct road on very steep terrain (greater than 30%) ^{1, 2}	6.0 to 8.0	Temporary 69.8 to 93.1 Permanent 11.6 to 15.5	1.0	1.9

¹ After construction of the transmission line, all access roads in Categories 4 through 6 would be restored back to 16 feet wide.

² On steep terrain (approximately 25% or higher) with limited access on the Angeles National Forest, the USFS may require Helicopter Mitigation.

Wherever possible, roads would be built at right angles to streams and washes. Culverts or other drainage structures would be installed as necessary across drainages, but the roads would usually follow the natural grade. In addition, road construction would include dust-control and erosion control measures in sensitive areas. All existing roads would be left in a condition equal to or better than their condition prior to the construction of the transmission line without changing their service level. Gates would be installed where required at fenced property lines to restrict general vehicular access from or to the right-of-way. Where identified within the environmental studies for mitigation purposes, access roads may be excluded or limited within specific sensitive areas, such as Riparian Conservation Areas (RCAs) on the Angeles National Forest.

1.1.4 Clearing Right-of-Way

The clearing of some natural vegetation may be required. However, selective clearing would be performed only when necessary to provide for surveying, electrical safety clearances, line reliability, and maintenance. Trimming or removal of mature vegetation, under or near the conductors, would be done to provide adequate electrical clearance as required by the National Electrical Safety Code, the North American Electrical Reliability Corporation, and California Public Utilities Commission General Order 95 standards.

Trees that could fall onto the lines or affect lines during wind-induced line swing would be removed. Normal clearing procedures are to top or remove large trees and not disturb smaller trees. Where there is a direct conflict between trees and clearance standards, the removal of trees would be jointly reviewed and agreed upon between LADWP and the owners or managers of the property. Rights-of-way would not be chemically treated unless necessary to comply with requirements of a permitting agency. On National Forest System (NFS) lands, approved herbicides would be utilized within the Project area on select invasive plant species. Invasive plant surveys and control would continue for the life of the Project.

1.1.5 Tower Site Clearing

After access roads are developed, preparation of individual structure sites would be required to install the structures. At tower locations, work areas of up to 200 feet squared in flat terrain and up to 200 by 250 feet in areas with slopes greater than eight percent may be needed. Within the work areas, at some tower locations, a level cleared area (pad) may be necessary to complete the construction of the towers. However, many tower sites would be considerably smaller depending on the size of the tower, the terrain, resource considerations, and whether helicopter construction was used, among other factors. The work area would be required for the location of tower footings, assembly of the tower, and the necessary crane maneuvers. Vegetation would be mostly crushed, and cleared only when necessary. All pads not needed for normal transmission line maintenance would be graded to blend as near as possible with the natural contours, and revegetated where required by a permitting agency. See Table 2 for tower specifications and Table 5 for estimated temporary and permanent ground disturbance associated with the double-circuit steel lattice towers.

TABLE 2. DOUBLE-CIRCUIT STEEL LATTICE TOWER SPECIFICATIONS

Tower Placement Details	Specifications	
	Categories 1 through 3 Flat (0 – 10% slope)	Categories 4 through 6 Mountainous (10 – 30% slope)
Towers per mile	±5	±5
Average span length	1,100 ft.	1,000 ft.
Average height		
Ground to lowest attachment	115 ft.	105 ft.
Upper body height	52 ft.	52 ft.
Overall tower height	167 ft.	157 ft.
Typical range of heights of new towers	120 – 195 ft.	110 – 185 ft.

1.1.6 Staging Areas and Batch Plants

It is anticipated that one or two construction yards or staging areas would be required for materials storage, construction equipment, construction vehicles, and temporary construction offices. Staging areas would be approximately five acres in size, and located centrally or near each end of the transmission line route. The staging areas would be located on previously disturbed private land and would be level and surfaced with crushed aggregate base. The LADWP would negotiate with landowners for specific locations of the staging areas.

Concrete for use in constructing foundations would be dispensed from a portable concrete batch plant located at approximately 15 mile intervals. A rubber-tired flatbed truck and tractor would be used to relocate each plant along the right-of-way. Commercial ready-mix concrete would be used when access to tower construction sites is economically feasible.

The construction yards and batch plants would be located on private land and serve as field offices, reporting locations for workers, parking space for vehicles and equipment, sites for material storage, and stations for equipment maintenance. Facilities would be fenced and their gates locked. Security guards would be stationed where needed. See Table 3 for estimated ground disturbance associated with the staging sites and batch plants.

TABLE 3. STAGING SITES AND BATCH PLANT GROUND DISTURBANCE ESTIMATES

Disturbance Description	Categories 1 through 3 Flat (0 – 10% slope)*	
	Maximum Estimated Disturbance Dimension per site	Average Disturbance
Material staging sites (2 sites)	400 x 540 ft. (5 acres)	N/A
Concrete batch plants (3 sites maximum)	2 acres, 30 mile haul distance	0.2 acre per mile
Total Average Disturbance	0.2 acre per mile	

*Material staging sites and concrete batch plants would not be built on terrain above 10% slope.

1.1.7 Foundation Installation

Tower foundations for the lattice structures would consist of drilled concrete piers. The foundation process would start with the boring of four holes for each lattice structure or one hole for each TSP. The holes would be bored using truck- or track-mounted excavators with various diameter augers to match diameter and depth requirements of the foundation sizes.

For a typical suspension lattice tower, each hole would typically be four feet in diameter and 25 feet deep, depending on soil conditions. For the larger angle or dead-end structures, foundations could be up to 30 or more feet deep, depending on soil conditions. Each foundation would extend above the ground line between six inches and four feet. In extremely sandy areas, soil stabilization by water or a gelling agent may be used prior to excavation. Refer to Figure 1 and Figure 2 for typical foundation details for double-circuit towers.

Following excavation of the foundation holes, each footing would be constructed by placing formwork, reinforcing steel and a tower stub into the foundation hole, positioning the stub, and encasing it in concrete. Reinforcing steel cages would be assembled at laydown yards and delivered to each structure location by flatbed truck. Spoil material would be spread around the tower site and used for fill where suitable. The foundation excavation and installation would require access to the site by a power auger or drill, a crane, material trucks, and ready-mix trucks. Typical suspension structures would require approximately 25 to 40 cubic yards of concrete and dead-end structures would require approximately 120 cubic yards of concrete.

FIGURE 1. TYPICAL FOUNDATION DESIGN FOR THE DOUBLE-CIRCUIT STEEL LATTICE TOWERS

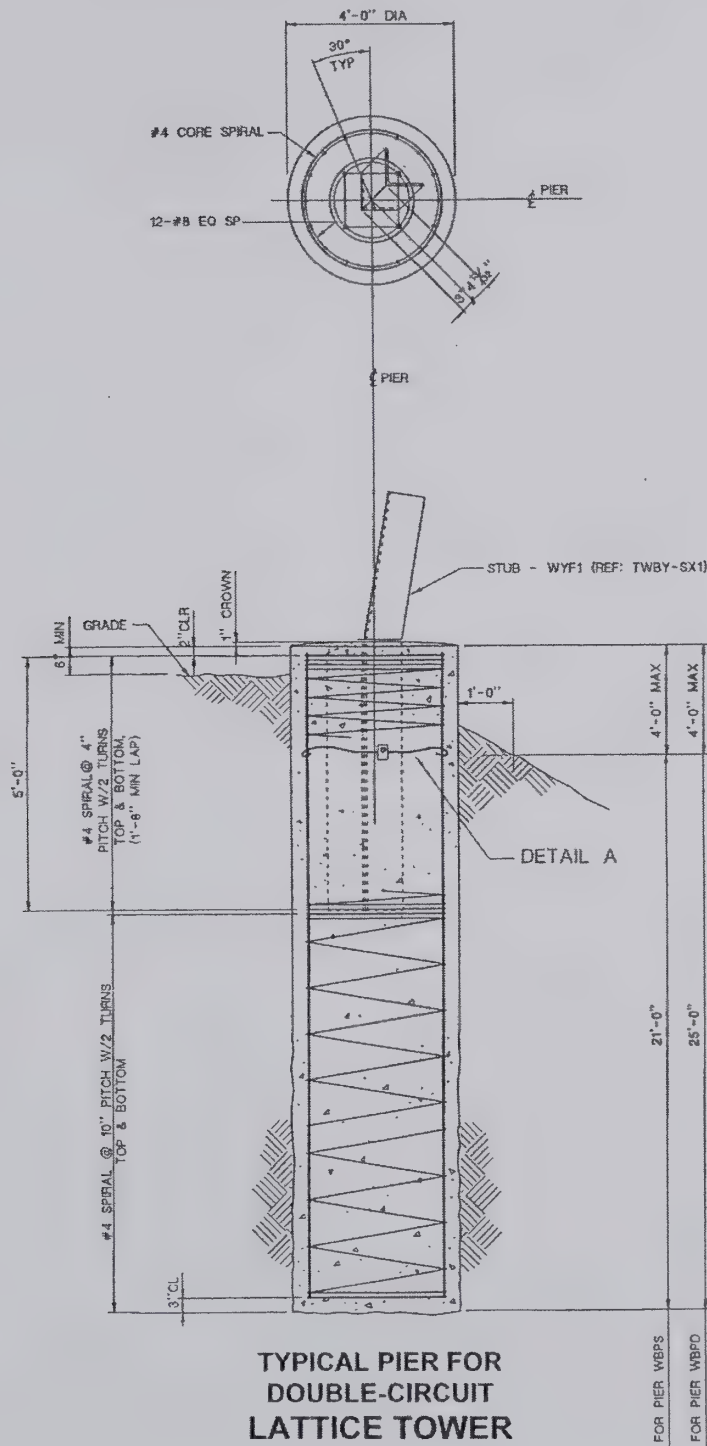
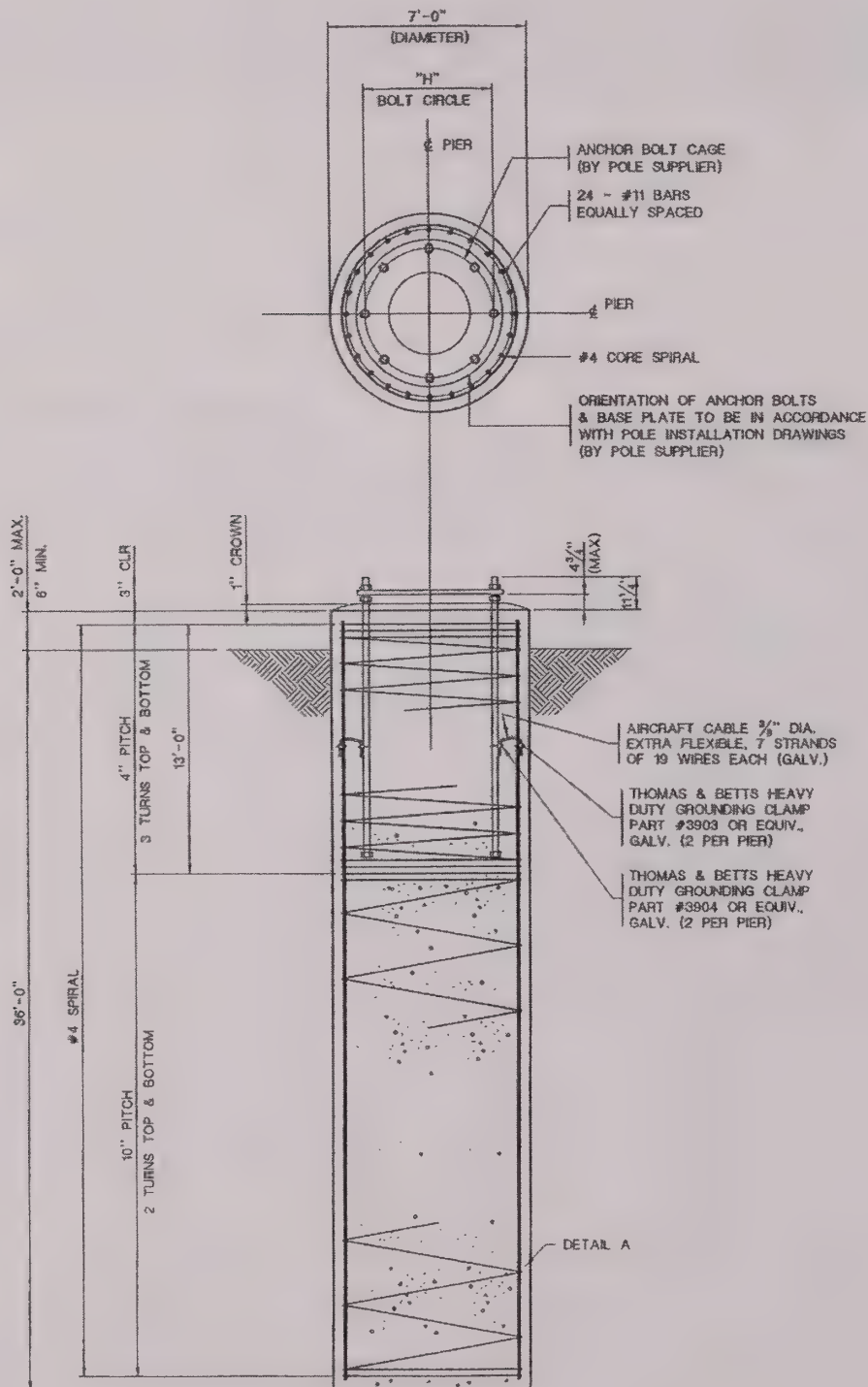


FIGURE 2. TYPICAL FOUNDATION DESIGN FOR TUBULAR STEEL POLES



TYPICAL PIER FOR
DOUBLE-CIRCUIT
POLE

1.1.8 Tower Assembly and Installation

The size of the work areas for structures (assembly and installation sites) would be approximately 40,000 to 50,000 square feet (1 acre = 43,560 ft²) depending on terrain. The location of these sites has not yet been determined, but exact locations would be identified within the COM Plan and POD prior to a Notice to Proceed from the agencies. Lattice towers would be assembled at each site, installed and bolted to the foundations. Bundles of steel members and associated parts would be transported to each tower site by truck. Steel members would be assembled into subsections of convenient size and weight on the ground. Assembly would be facilitated with a small rough-terrain crane. The assembled subsections would be erected into place by a large crane and then fastened together in the air to form a complete tower. See Figure 3 for an illustration of typical tower assembly and installation activities.

FIGURE 3. TYPICAL TOWER ASSEMBLY AND INSTALLATION ACTIVITIES



1.1.9 Conductor Installation

After the towers are erected, insulators, hardware, and stringing sheaves would be delivered to each tower site. The towers would be rigged with insulator strings and stringing sheaves at each ground wire and conductor position. Sheaves are rollers, temporarily attached to the lower end of the insulators that allow the conductor to be pulled, or “strung,” along the line.

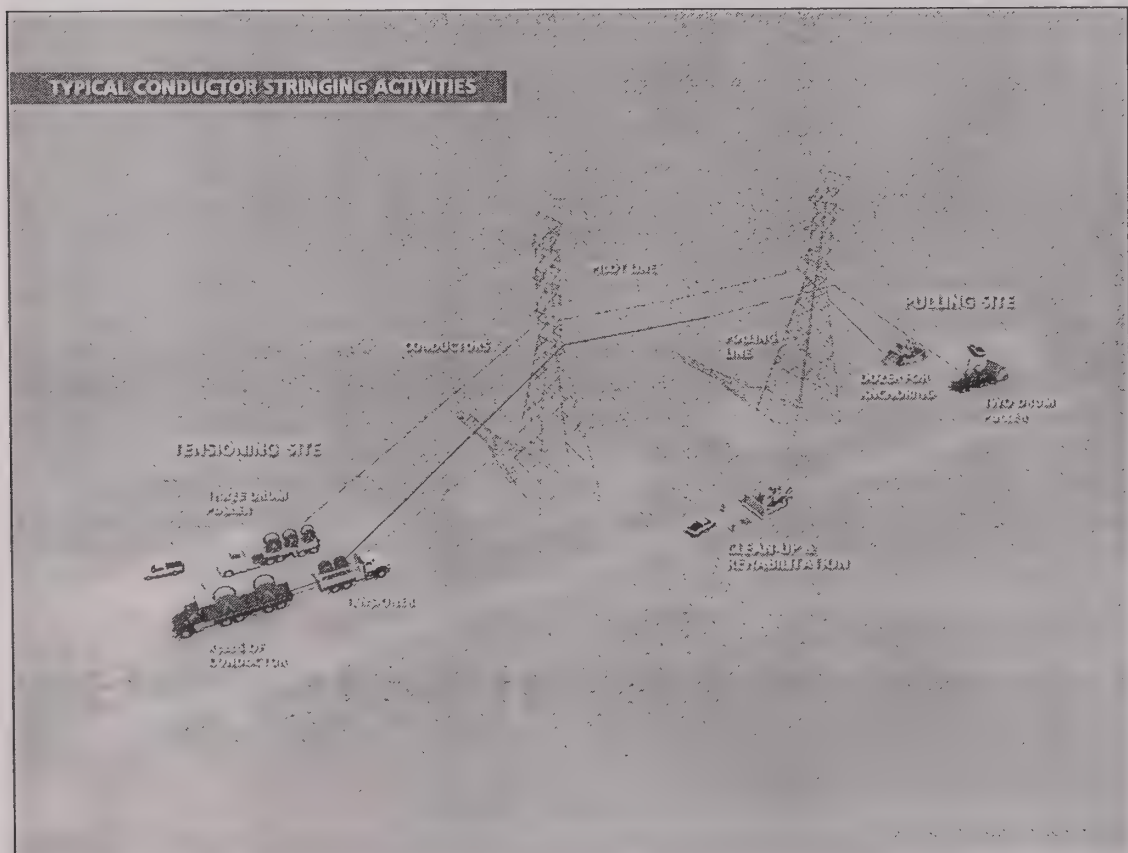
For public protection during wire installation, temporary guard structures would be built next to highways, railroads, power lines, structures, and other major obstacles. Guard structures would consist of

H-frame poles placed on either side of an obstacle. These structures would prevent ground wire, conductor, or equipment from falling on an obstacle. Equipment for installing guard structures would include augers, line trucks, pole trailers, and cranes. A guard structure would be anticipated to be necessary every five miles. The amount of ground disturbance would typically be 200 feet by 300 feet. The guard structures would be left in place until conductors and ground wires were strung, tensioned and clipped; this time frame would be approximately three weeks or longer depending on conditions. Guard structures may not be necessary for small roads. In such cases, other safety measures, such as barriers, flagmen, or other traffic control, would be used.

Pilot lines would be pulled (strung) from tower to tower by a helicopter and threaded through the stringing sheaves at each tower. The pilot line can be used to pull in the ground wire, but is used to pull in a larger-diameter, stronger pulling line for the conductor. The larger-diameter, stronger line—pulling line—would be attached to the conductors to pull them onto towers. This process would be repeated until the ground wire or conductor is pulled through all sheaves. Bundled conductors would be pulled together with the assistance of a running board. The running board attaches the bundled conductor to the pulling line.

Ground wire and conductors would be strung using powered pulling equipment at one end and powered braking or tensioning equipment at the other end of a conductor segment as shown on Figure 4. Sites for tensioning equipment and pulling equipment would be approximately 2.5 miles apart.

FIGURE 4. TYPICAL CONDUCTOR STRINGING ACTIVITIES



To the greatest extent practical, pulling and tensioning sites would be located within the transmission ROW. However, some pulling and tensioning sites may occur outside the ROW. The tensioning and pulling sites could be as large as 200 feet by 500 feet, however they would be limited in size depending on each specific location and what is reasonable for safe construction practices. The size of each site would be limited as much as possible and would be designed in coordination with the responsible property owner or land management agency. Depending on topography, some grading may be required at pulling and tensioning sites to create level pads for equipment. Tensioners, line trucks, wire trailers, and tractors needed for stringing and anchoring the ground wire or conductor would be located at the tensioning sites. A puller, line trucks, sag cat and tractors would be needed for pulling and temporarily anchoring the ground wire and conductor. Table 5 includes ground disturbance estimates for conductor installation (helicopter fly yards, portable helicopter landing pads, pulling and stringing sites, and sleeving and stringing operations).

After installing the conductor ground wire or fiber optic shield wire, sagging, clipping and dead-ending activities, terminating the conductors at dead-end structures, would be performed. This process would involve adjusting the position of the conductors and shield wires, removing stringing sheaves, and permanently attaching the conductor to the insulators with specialized hardware.

1.1.10 Counterpoise Installation and Grounding Practices

Part of standard construction practice prior to wire installation would involve measuring the resistance of tower footings and installation of counterpoise (grounds) as needed. To determine if a tower would require counterpoise, ground resistance measurements would be taken at towers sites after the installation of the foundations and structures. The measurements would be evaluated to determine the numbers and locations of structures requiring counterpoise. If the resistance to remote earth for each transmission tower is greater than 10 ohms, counterpoise (grounds) would be installed to lower the resistance to 10 ohms or less. Counterpoise would consist of a bare copper-clad or galvanized steel cable buried a minimum of 12 inches deep, extending horizontally from one or more tower legs for approximately 200 feet. Typical counterpoise installation would include two installations per structure on opposite tower legs. Four installations per tower could be required in certain circumstances.

In addition to counterpoise installation, standard grounding practices during construction would include both temporary and permanent grounding of equipment and structures, such as fences or pipelines, as necessary to reduce any potential magnetically induced voltages to harmless levels. Such practices could include electrical isolation of equipment or structures and the installation of grounding wires.

1.1.11 Switching Station Tie-in

At the proposed Haskell Canyon Switching Station, the transmission lines would be connected into and out of the switching station through dedicated station structures within the switching station, commonly referred to as “bus.”

1.2 UPKEEP OF CONSTRUCTION SITES

Construction sites, material storage yards, and access roads would be kept in an orderly condition throughout the construction period. Refuse and trash would be removed from the sites and disposed of in an approved manner. Oils and fuels would not be dumped along the line. Oils or chemicals would be hauled to a disposal facility authorized to accept such materials. No open burning of construction trash would occur without agency approval.

Microtrash would be cleaned daily from all work areas within known California condor habitat. Microtrash is a term used to describe small bits of debris like bottle caps, rags, screws, bolts, wires, glass, and other materials found in condor habitat.

1.3 HAZARDOUS MATERIALS WITHIN THE PROJECT AREA

Petroleum products such as gasoline, diesel fuel, helicopter fuel, crankcase oil, lubricants, and cleaning solvents would be present within the Project area during construction. These products would be used to fuel, lubricate, and clean vehicles and equipment. These products would be containerized by fuel trucks or by approved containers. When not in use, hazardous materials would be properly stored to prevent drainage or accidents.

Hazardous materials would not be drained onto the ground or into streams or drainage areas. Totally enclosed containment shall be provided for all trash. All construction waste including trash and litter, garbage, other solid waste, petroleum products, and other potentially hazardous materials would be removed to a disposal facility authorized to accept such materials.

All construction, operation, and maintenance activities would comply with all applicable federal, state, and local laws and regulations regarding the use of hazardous substances.

The construction or maintenance crew foreman would insure that all applicable laws are obeyed. In addition, an on-site inspector would be present during construction to make sure that all hazardous materials are used and stored properly. A health and safety plan would be developed as part of the COM Plan and POD during the engineering and preconstruction phase of the Project.

1.4 SITE RECLAMATION

The ROW, including temporary construction sites, and any temporary ground disturbance outside of the ROW that may have been caused during or due to the construction of the Project (e.g., temporary access roads, staging sites, assembly yards) would be restored as required by the property owner or land management agency. All practical means would be used to restore the land to its original contour and to restore natural drainage patterns along the ROW. Because revegetation would be difficult in many areas of the Project where precipitation is minimal, it would be important to minimize disturbance during construction. All practical means would be used to increase the chances of vegetation reestablishment in disturbed areas.

The total construction period would be approximately two years. The COM Plan that would be completed during the engineering and preconstruction phase of the Project would address specific site reclamation of all disturbed areas.

1.5 FIRE PROTECTION

A Fire Management Plan would be developed for the Project and all applicable fire laws and regulations would be observed during the construction period. All personnel would be advised of their responsibilities under the applicable fire laws and regulations, including taking practical measures to report and suppress fires.

1.6 CONSTRUCTION MONITORING

An approved compliance program would be developed to address mitigation requirements associated with the avoidance of sensitive plant and animal species, cultural sites, or other sensitive features located

within or adjacent to the Project. Prior to construction, these measures will be described in detail and included in the POD.

1.7 THREE-CIRCUIT TOWER MITIGATION

A temporary transmission line would be constructed to keep the BR-RIN circuit energized during construction of the three-circuit towers. After the temporary line is constructed, the existing BR-RIN single-circuit towers would be removed to allow the new three-circuit towers to be constructed within the existing ROW. Once construction of the three-circuit towers is completed, the temporary transmission line would be removed.

The temporary transmission line would be 7.5 miles long and would consist of wood and steel single poles with an average height of 95 feet, a 3-foot by 3-foot footprint, and an average of eight poles per mile. Construction would occur within a temporary 80- to 100-foot ROW. Refer to Table 4 for specifications and to Table 5 for ground disturbance estimates. The majority of the temporary transmission line would be constructed along San Francisquito Road. Portions would also be constructed along Elizabeth Lake Road and Johnson Road. Pole placement would be adjacent to public roadways wherever possible. If necessary, temporary ROW on private property would be needed where poles could not be placed within public road ROW. The majority of poles would be direct-embedded when set in place and would not require a permanent foundation. Where additional strength is necessary at larger angle points, steel poles would be required, which could require an excavation approximately 6 feet in diameter by 20 feet deep to accommodate the concrete pier foundation that would be cast in place. Once all the poles have been constructed and the conductor installed, the existing BR-RIN circuit would be connected into the temporary line and energized. The construction would require establishment of a staging area, work areas around poles, and pull and tension sites. Access to pole sites and pull and tension sites would be from the adjacent roadways.

Approximately seven miles of the existing BR-RIN single-circuit towers would be removed, with existing ROW utilized to access the existing towers. The new three-circuit towers would be placed within the existing ROW, utilizing existing access roads. Helicopter Mitigation, as described in this section below, would be applied in steeper terrain crossing the Angeles National Forest if additional access is required. If additional access roads, considered to be longer than 300 feet, are necessary, specific locations and construction method (either helicopter or conventional) would be coordinated with the USFS. The new three-circuit tower would require a 25-foot by 30-foot structure footprint and an average of seven structures per mile; the average structure height would be 170 feet, with a maximum tower-to-tower span length of 780 feet. Structures would be installed in the same locations as the existing BR-RIN structures within the limits of standard tower design. The construction process for the new three-circuit towers would be the same as the double-circuit towers discussed above. After completion of construction of the three-circuit towers, the temporary transmission line would be removed and all temporary staging and work area land disturbances would be restored as close to previous conditions as possible and revegetated as required. Restoration practices would be consistent with Section 1.11 Decommissioning of Transmission Lines.

TABLE 4. THREE-CIRCUIT TOWER SPECIFICATIONS

Tower Placement Details	Specifications	
	Triple-Circuit	Temporary Transmission Line
ROW acquisition	None (within existing)	80-100 ft
Structures per Mile	7	8
Average span length	750 ft	650 ft

Tower Placement Details	Specifications	
	Triple-Circuit	Temporary Transmission Line
Average height (ft)	120	60
Ground to lowest attachment		
Upper body height	50	45
Overall tower height	170	105
Typical range of heights of new towers	150 - 180 ft.	95 - 105 ft.

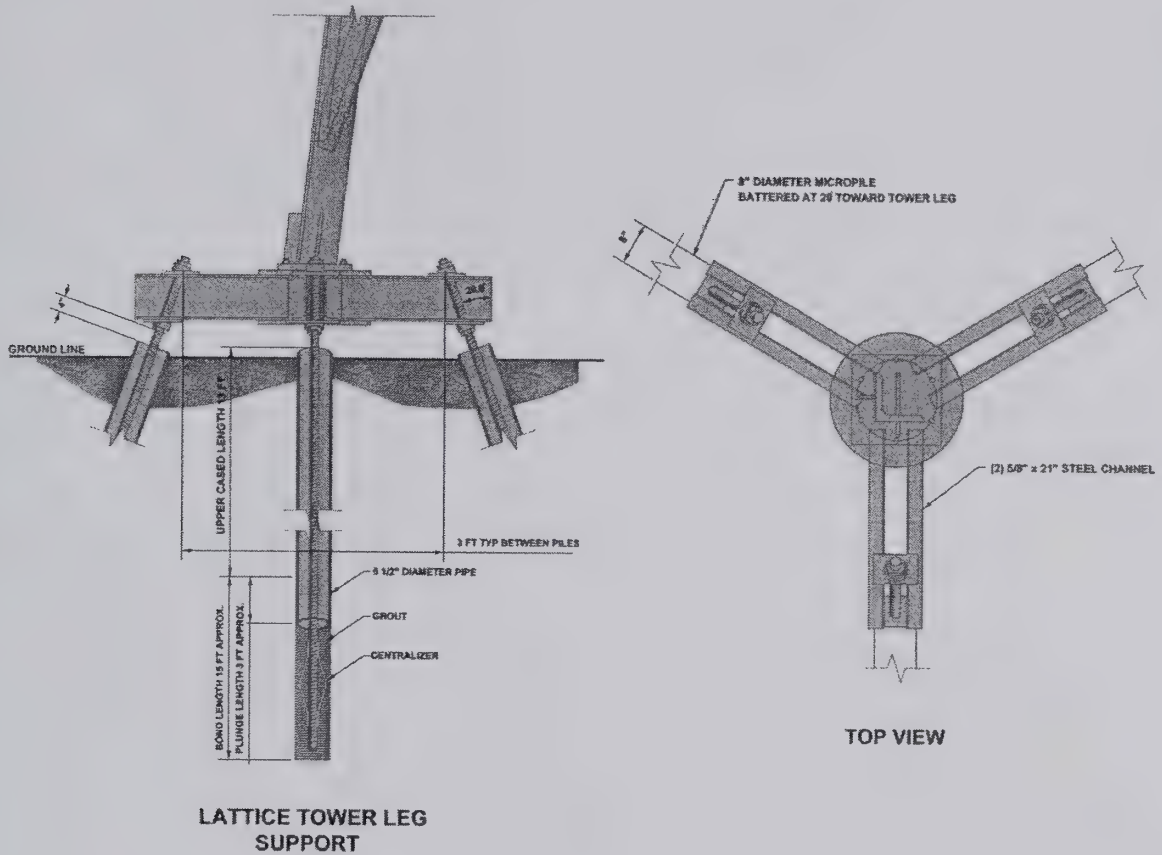
1.8 HELICOPTER MITIGATION

The following sites and ground disturbing construction activities would be required to construct the new transmission line within the identified helicopter construction areas: portable landing pads, helicopter fly yards/staging areas and associated temporary access roads, tower structure vegetation clearing, guard structures at major crossings, and access road pullouts. Refer to Table 5 for ground disturbance estimates for the Helicopter Mitigation.

The transmission line materials (tower steel, conductor reels, structure hardware, etc.) would be delivered by truck to the helicopter fly yards/staging areas. Vegetation clearing may be required at these sites to ensure safe working conditions. The fly yards/staging areas would serve as helicopter support yards for fueling and maintenance, as well as for the transport of materials and personnel. Towers may also be assembled in sections at these yards prior to delivery to the tower sites. Heavy lift helicopters would then fly the towers from the yards to the tower sites.

Portable landing pads would be located at each tower site. These pads would allow helicopters to load and unload personnel, tools, and equipment necessary for construction of foundations and assembly of tower structures. Helicopter-constructed towers that would not be in close proximity to existing access roads would utilize micropile foundations. For each tower leg, micropile foundations would use a group of three to eight 6- to 9-inch diameter casings that would be drilled and grouted into the ground. The exposed portion of the pile group would be encased in a reinforced concrete cap from the top of the casings to a depth anywhere from one to eight feet below the ground surface, depending on the terrain. Figure 5 illustrates the plan view and sections of a micropile foundation.

FIGURE 5. MICROPILE FOUNDATION



Conductor installation would proceed as for double-circuit tower installation. The equipment necessary for conductor installation would be large, heavy construction equipment that could only be brought in by truck. Some NFS roads could need maintenance or improvement to allow pulling and tensioning, but no new access or spur roads would be created for conductor installation on the helicopter-constructed towers.

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TABLE 5 GROUND DISTURBANCE ESTIMATES FOR

Disturbance Description	Disturbance Category	Helicopter Mitigation (Steel Lattice Towers with Helicopter Installation of Towers and Conductors)	
		Estimated Disturbance Dimension	Average Disturbance
Tower installation	200	100 x 100 ft. (0.2 acre) per tower ±5 towers per mile	1 acre per mile
Guard structures at major crossings	C	200 x 300 ft. (1.3 acres) One crossing every 5 miles	0.3 acre per mile
Helicopter fly yards / staging areas (includes fueling station at one of the sites)		650 x 650 ft. (10 acres) One site every 5 miles	2 acres per mile
Landing area/Portable helicopter landing pads (includes vegetation clearing for site)	50	50 x 50 ft. (0.06 acre) per site Five sites per mile	0.3 acre per mile
Pulling and tensioning sites	200	200 x 500 ft (2.3 acres) per site One site every 2.5 miles**	0.9 acre per mile
Sleeving and miscellaneous stringing operations	100	100 x 200 ft. (0.5 acre) per site One site every 2.5 miles	0.2 acre per mile
Total Average Temporary Disturbance³		3.7 acres per mile	
Tower sites, including vegetation clearance within a 10-foot radius around base of towers in accordance with state law		60 x 60 ft. (0.08 acre) ±5 towers per mile	0.2 acre per mile
Total Average Permanent Disturbance⁴		0.2 acre per mile	

Information based on LADWP and POWER Engineers, Inc. estimates.

¹ For slopes over 10% (ground disturbance categories 4-6), site dimension

² For slopes over 10% (ground disturbance categories 4-6), sites would be

³ Access and spur road disturbances included in Table 1.

⁴ Ibid.

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TABLE 5 GROUND DISTURBANCE ESTIMATES FOR THE PROPOSED 230 kV DOUBLE-CIRCUIT TRANSMISSION LINE

Disturbance Description	Double-Circuit Steel Lattice Towers with Helicopter Stringing of Conductors		Three-Circuit Tower Mitigation (Three-Circuit Steel Lattice Towers with Helicopter Stringing of Conductors)				Helicopter Mitigation (Steel Lattice Towers with Helicopter Installation of Towers and Conductors)	
			Three-Circuit		Temporary Transmission Line			
	Estimated Disturbance Dimension	Average Disturbance	Estimated Disturbance Dimension	Average Disturbance	Estimated Disturbance Dimension	Average Disturbance	Estimated Disturbance Dimension	Average Disturbance
	Temporary Disturbance During Installation							
Tower installation	200 x 200 ft. (0.9 acre) per tower ±5 towers per mile ¹	4.6 acres per mile	200 x 200 ft. (0.9 acre) per tower ±7 towers per mile	6.4 acres per mile	50 X 100 ft. (0.1 acre) per tower ±8 towers per mile	0.9 acre per mile	100 x 100 ft. (0.2 acre) per tower ±5 towers per mile	1 acre per mile
Guard structures at major crossings	200 x 300 ft. (1.4 acres) One crossing every 5 miles	0.3 acre per mile	200 x 300 ft. (1.4 acres) One crossing every 5 miles	0.3 acre per mile	40 X 100 ft. (0.09 acres) One crossing every 5 miles	0.02 acre per mile	200 x 300 ft. (1.3 acres) One crossing every 5 miles	0.3 acre per mile
Helicopter fly yards / staging areas (includes fueling station at one of the sites)	200 x 200 ft.(0.9 acre) One site every 5 miles	0.2 acre per mile	200 x 200 ft (0.9 acre) One site every 5 miles	0.2 acre per mile	200 x 200 ft (0.9 acre) One site every 5 miles	0.2 acre per mile	650 x 650 ft. (10 acres) One site every 5 miles	2 acres per mile
Landing area/Portable helicopter landing pads (includes vegetation clearing for site)	50 x 50 ft.(0.06 acre) per site One site every 3.5 miles	0.02 acre per mile	50 x 50 ft (0.06 acre) per site One site every 3.5 miles	0.02 acre per mile	50 x 50 ft (0.06 acre) per site One site every 3.5 miles	0.02 acre per mile	50 x 50 ft. (0.06 acre) per site Five sites per mile	0.3 acre per mile
Pulling and tensioning sites	200 x 500 ft (2.3 acres) per site One site every 2.5 miles ²	0.9 acre per mile	200 x 500 ft (2.3 acres) per site One site every 2.5 miles**	0.9 acre per mile	200 x 500 ft (2.3 acres) per site One site every 2.5 miles**	0.9 acre per mile	200 x 500 ft (2.3 acres) per site One site every 2.5 miles**	0.9 acre per mile
Sleeving and miscellaneous stringing operations	100 x 200 ft. (0.5 acre) per site One site every 2.5 miles	0.2 acre per mile	100 x 200 ft. (0.5 acre) per site One site every 2.5 miles	0.2 acre per mile	50 x 100 ft (0.1 acres) per site One site every 2.5 miles	0.05 acre per mile	100 x 200 ft. (0.5 acre) per site One site every 2.5 miles	0.2 acre per mile
Total Average Temporary Disturbance ³	6.2 acres per mile		8 acres per mile		2.1 acres per mile		3.7 acres per mile	
	Permanent Disturbance							
Tower sites, including vegetation clearance within a 10-foot radius around base of towers in accordance with state law	60 X 60 ft (0.08 acres) ±5 towers per mile	0.2 acre per mile	45 x 50 ft. (0.05 acre) ±7 towers per mile	0.14 acre per mile	N/A	N/A	60 x 60 ft. (0.08 acre) ±5 towers per mile	0.2 acre per mile
Total Average Permanent Disturbance ⁴	0.2 acre per mile		0.14 acre per mile		N/A		0.2 acre per mile	

Information based on LADWP and POWER Engineers, Inc. estimates. Actual disturbance areas may be smaller based on final engineering design.

¹ For slopes over 10% (ground disturbance categories 4-6), site dimensions would be 200 x 250 ft. (1.2 acres) and have an average disturbance of 5.8 acres per mile.
² For slopes over 10% (ground disturbance categories 4-6), sites would be every 2 miles and have an average disturbance of 1.2 acres per mile.
³ Access and spur road disturbances included in Table 1.
⁴ Ibid.

1.9 OPERATION OF TRANSMISSION LINES

The nominal voltage for the BR RTP transmission line would be 230 kV AC. There may be minor variations of up to five percent above the nominal level depending upon load flow.

1.9.1 Permitted Uses

After the transmission line has been energized, land uses that are compatible with safety regulations (such as agriculture and grazing) would be permitted in and adjacent to the right-of-way. Incompatible land uses within the right-of-way include construction and maintenance of inhabited dwellings, and any use requiring changes in surface elevation that would affect electrical clearances of existing or planned facilities.

Land uses on public lands that comply with local regulations would be permitted adjacent to or within the ROW, with require approval from the appropriate agency. Permission to use the ROW on private lands would have to be obtained from the utility owning the transmission line.

1.9.2 Safety

Safety is a primary concern in the design of this 230 kV transmission line. The AC transmission line would be protected with power circuit breakers and related line relay protection equipment. If conductor failure occurs, power would be automatically removed from the line. Lightning protection would be provided by overhead ground wires along the line. Electrical equipment and fencing at the switching station would be grounded. All fences, metal gates, pipelines, and other metal components that cross or are within the transmission line ROW would be grounded to prevent electrical shock. If applicable, grounding outside of the ROW may also occur.

1.10 MAINTENANCE OF TRANSMISSION LINES

The 230 kV transmission line would be inspected several times annually by both ground and air patrols. Maintenance would be performed as needed. When access is required for non-emergency maintenance and repairs, LADWP would adhere to the same precautions and procedures that were taken during the original construction.

Emergency maintenance would involve prompt movement of repair crews to repair or replace any damaged equipment or infrastructure. Crews would be instructed to protect crops, plants, wildlife, and other resources of significance. Restoration procedures following completion of repair work would be those prescribed for project implementation construction. The comfort and safety of local residents would be provided for by limiting noise, dust, and the danger caused by maintenance vehicle traffic. Details would be provided in the COM Plan and POD prior to line construction.

1.10.1 Vegetation Management

Vegetation management along the transmission line ROW would be required by the North American Reliability Council (NERC). In compliance with the NERC's Standard FAC-003-1, LADWP would prepare a Vegetation Management Plan for the BR RTP. The Vegetation Management Plan would be included in the COM Plan to be completed prior to the issuance of a Notice to Proceed from the USFS and BLM. Vegetation management would consist of routine tree trimming to maintain the required minimum 10-foot clearance from conductors to vegetation (California Public Resources Code [PRC] 4293); clearance of flammable brush vegetation within a 10-foot radius around the base of transmission line towers in accordance with California PRC 4292; and clearance immediately adjacent to access roads to permit adequate access to the facilities.

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1.10.2 Access Road Maintenance

Ongoing access road maintenance would be conducted in accordance with existing or new road authorizations issued to LADWP. Access road maintenance consists of those activities necessary to allow continued access to the ROW and/or each tower structure. These activities may include grading, and maintenance of drainage systems, bridges, culverts, fences, gates and signs. Motor graders, backhoes, dump trucks and pickups are used to maintain access roads.

1.11 DECOMMISSIONING OF TRANSMISSION LINES

At the end of the useful life of the proposed Project, if the facility were no longer required, or if extension of the authorizations were not granted by federal land agencies at the time they expired, the transmission line would be abandoned. Subsequently, conductors, insulators and hardware would be dismantled and removed from the ROW. Tower structures would be removed and foundations broken off below ground surface.

If the line and associated ROW are abandoned at some future date, the ROW would be available for the same uses that existed prior to construction of the Project. Following abandonment and removal of the transmission line from the ROW, any areas disturbed to dismantle the line would be restored and rehabilitated as near as possible to their original condition.

2.0 ADDITION OF NEW 230 KV CIRCUIT

Between the proposed Haskell Canyon Switching Station and the existing Castaic Power Plant, LADWP proposes the addition of 12 miles of a new 230 kV transmission circuit onto existing Castaic – Olive 230 kV Transmission Line structures (towers 1-1 through 12-1). This new circuit would be called Castaic – Haskell Canyon #4 and would utilize the same conductor (2,156 kcmil “Bluebird” ACSS/AW) as that proposed for the new 230 kV transmission line between Barren Ridge and Haskell Canyon Switching Stations.

The addition of a new circuit on existing towers would require many of the same activities of a new transmission line (surveying of ROW, rehabilitation of existing access and spur roads, clearing of ROW, conductor installation, and cleanup). However, all work would be within existing ROW and no new towers would be constructed. Some towers may need to be modified or reinforced to carry the additional weight of the new conductor. Specific towers requiring reinforcement would be determined following detailed design of the Project. Tower reinforcement would not alter the general design or the location of the structures. This process would generally include reinforced foundations or steel member replacements.

3.0 RECONDUCTORING

LADWP proposes the reconductoring of 76 miles of the existing BR-RIN 230 kV transmission line with larger conductors between the Barren Ridge Switching Station and Rinaldi Substation (towers 176-1 through 251-1). The existing conductors (954/ 2,312 kcmil) would be replaced with a new 1,433.6 kcmil “Merrimack” ACSS/TW/HS conductor. The new conductor would have a larger diameter that allows for greater electrical capacity.

The upgrade of the existing BR-RIN would also require many of the same activities of the new transmission line (surveying of ROW, rehabilitation of existing access and spur roads, clearing of ROW, conductor installation, and cleanup). Removal of the existing conductor would be used to string a pulling line, and this line would then be used to pull in the new conductor. All work would remain within the existing 250-foot-wide ROW, with no additional ROW required. Some of the towers would need to be

modified, replaced, and/or have foundations reinforced or replaced to carry the additional weight of the new heavier conductor.

4.0 NEW HASKELL CANYON SWITCHING STATION

As a component of the BRRTP, LADWP proposes the construction of a new switching station in Haskell Canyon, south of the Angeles National Forest on LADWP-owned property at the convergence of several existing and proposed 230 kV transmission lines (the existing BR-RIN, the proposed double-circuit Barren Ridge-Haskell Canyon, existing Castaic-Northridge, Castaic-Sylmar, Castaic-Olive, and the proposed Castaic to Haskell Canyon).

The station would be approximately 500 feet by 600 feet to accommodate the necessary circuit positions, which are made up of equipment, such as steel support structures, circuit breakers, disconnect switches, and associated equipment, and a relay house and control house containing control and protective relaying equipment. The relay and control houses would each be approximately 30 feet long by 12 feet wide by 10 feet high and constructed of gray concrete block. The station yard would include a paved internal access road approximately 16 feet wide and would be enclosed by chain-link fencing with barbed-wire extension for security. Figure 6 illustrates the preliminary design layout for the station. Figure 7 illustrates the preliminary grading plan for the station.

Necessary pre-construction geotechnical investigation on-site would include six borings by a drill rig to investigate bedrock and soil stability and four cone penetration test locations after site grading to determine friction resistance for piers. The cone penetration test rig would be a small truck with a hydraulic ram assembly mounted on the back, which is used to push a 2.5-inch diameter cone into the ground to a depth up to 50 feet. Existing roads would be used to access the site.

Construction of the new Haskell Canyon Switching Station would consist of preconstruction surveys, clearing and grading of access roads, site grading and drainage development, installation of concrete foundations and steel support structures, installation of below- and above-ground electrical conduits for equipment power and control, installation of below- and above-grade grounding conductors, and installation of control and relay houses. Equipment required for station construction would include graders and excavators, backhoes, drill rigs, water trucks, scrapers, sheep's foot compactors, front end loaders, concrete trucks, trucks, and flatbed trailers. Cranes, man-lifts, portable welding units, line trucks, and mechanic trucks would also be required. Construction would require an estimated 12 months with approximately 60 workers.

Site preparation work for the station would involve clearing and grading of access roads, clearing of the switchyard site, the cut and fill grading of the site, and placement and compaction of structural fill that would serve as a base for switching station facilities. The site would be graded to maintain current drainage patterns as much as possible. A 16-foot wide paved road and 100-foot by 100-foot gravel parking area would be required. The yard would be covered with crushed-rock aggregate. Native vegetation would be re-established where possible outside the switchyard fence.

Following site grading and development, reinforced concrete foundations would be installed to support the steel structures and electrical equipment and control facilities. It is estimated that 1,500 cubic yards of concrete would need to be delivered to the switching station site for the foundations. Foundation work would require approximately 180 trips to the site by 40-ton, 10-yard capacity concrete trucks over a 120-day working period. Subsequent to the foundation installation, trenches would be dug to facilitate placement of copper conductors for the station grounding mat.

Multiple transmission lines would be terminated into the switching station (i.e., the new and existing Barren Ridge – Haskell and Castaic – Haskell Canyon transmission lines) and would need support and

require the installation of galvanized steel structures. An existing 115 kV transmission line may need to be relocated around the proposed station. High-voltage bus work consisting of aluminum jumpers and tubing would be installed within the station.

FIGURE 6. HASKELL CANYON SWITCHING STATION DESIGN LAYOUT

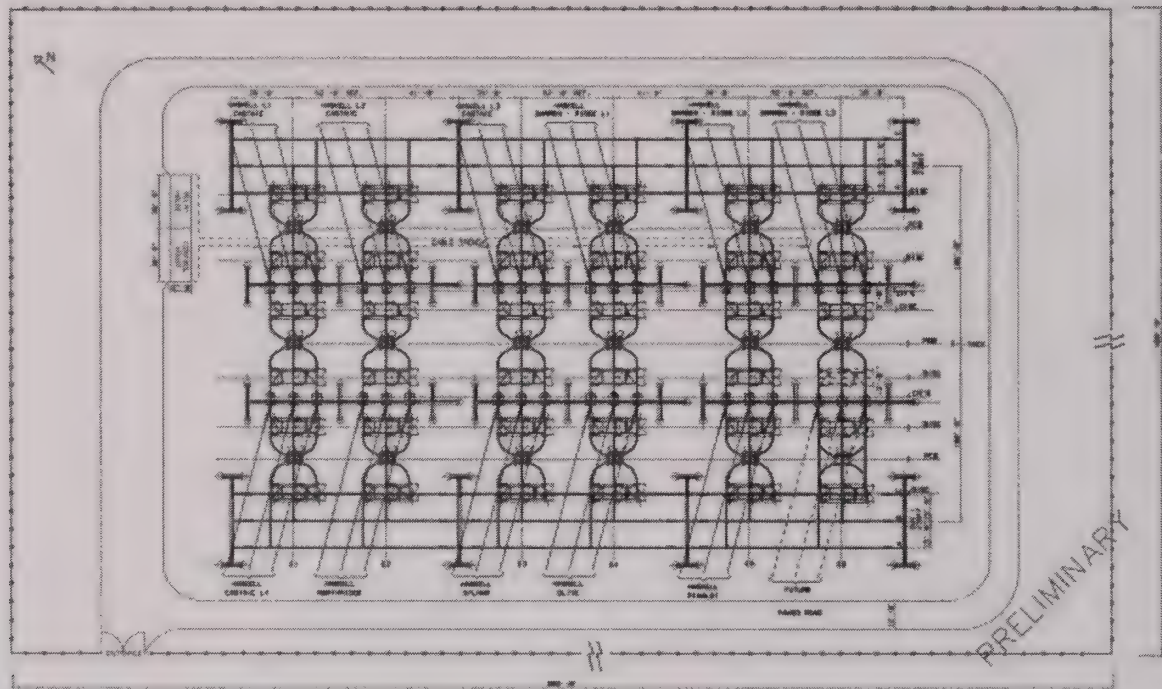
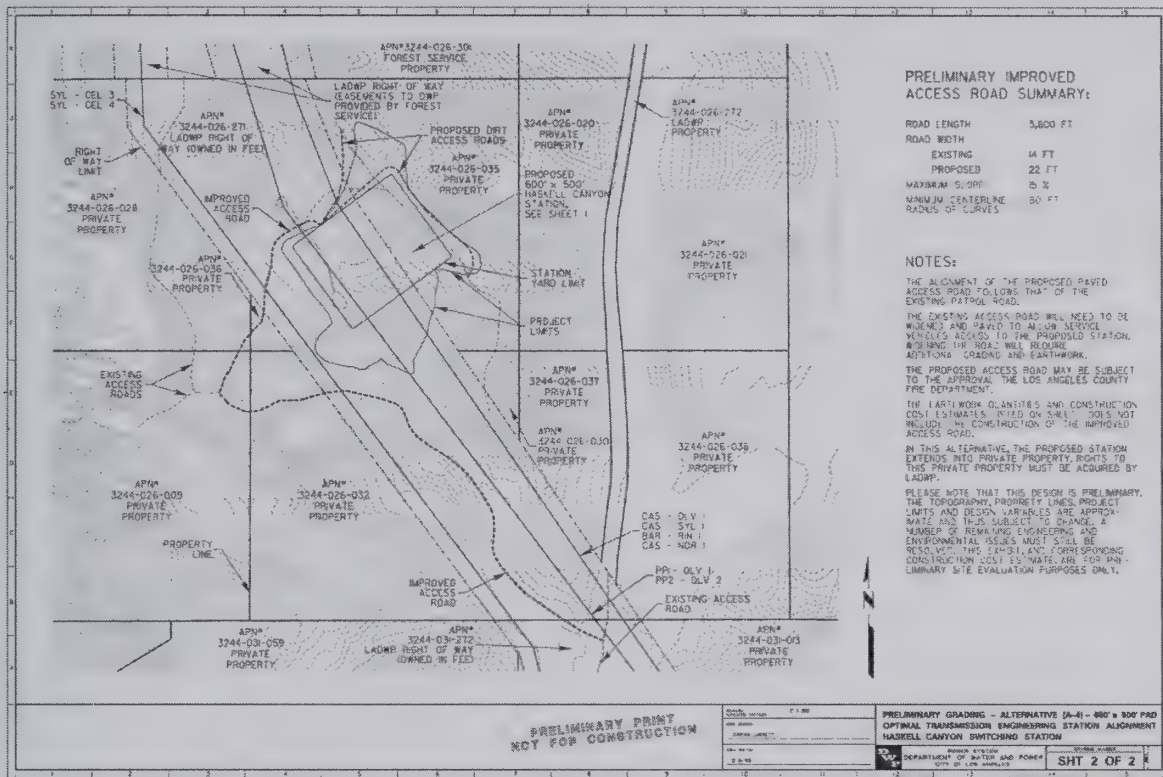


FIGURE 7. HASKELL CANYON GRADING PLAN



5.0 EXPANSION OF BARREN RIDGE SWITCHING STATION

LADWP proposes expansion of the existing Barren Ridge Switching Station to the east side by 235 feet by 500 feet, for a total station size of 485 feet by 500 feet (approximately 5.6 acres). The expansion area of the station would include electrical structures and equipment for the addition of transmission lines, a material staging area, roadway within the station, and drainage area. Figure 8 illustrates the preliminary design layout for the station.

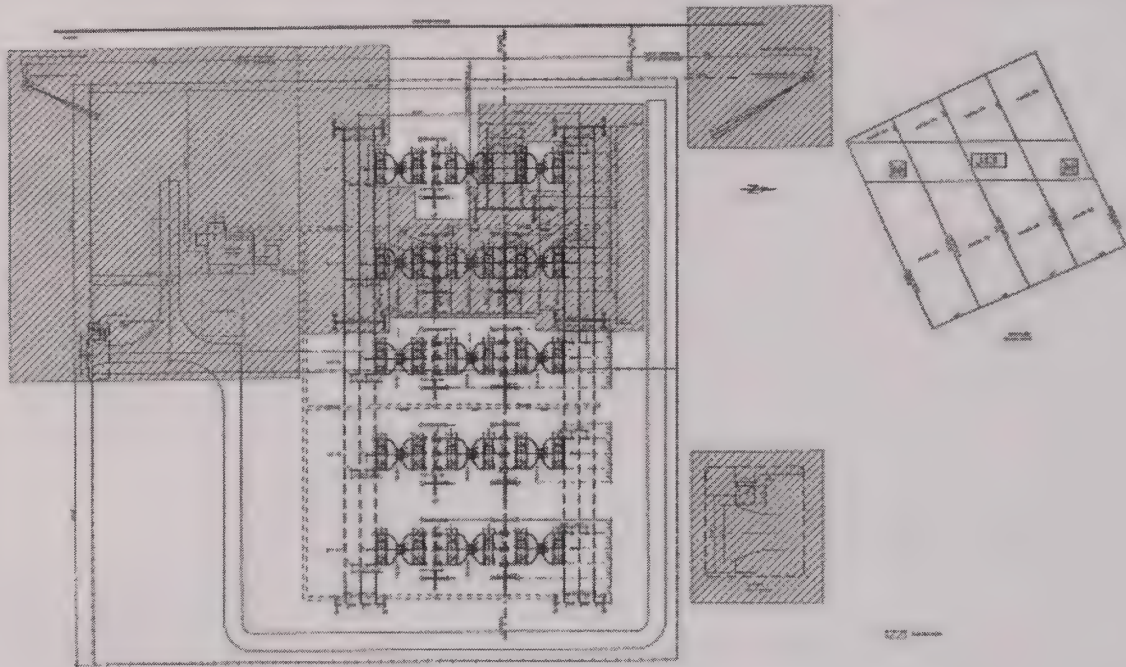
Expansion of the existing switching station would be very similar to the construction of the Haskell Canyon Switching Station as described above. Expansion would consist of preconstruction surveys, site preparation and grading, installation of reinforced concrete foundations, installation of electrical conduits for equipment power and control, and installation of structures and equipment.

Necessary pre-construction geotechnical on-site investigation would include two test pits excavated by a backhoe to investigate soil density and settlement, and four cone penetration test locations on-site to determine friction resistance for piers. The cone penetration test rig would be a small truck with a hydraulic ram assembly mounted on the back, which is used to push a 2.5-inch diameter cone into the ground to a depth up to 50 feet. Existing roads would be used to access the site.

It is estimated that 700 cubic yards of concrete would need to be delivered to the switching station site for the foundations. Foundation work would require approximately 80 trips to the site by 40-ton, 10-yard capacity concrete trucks over a 90-day working period. Equipment required for station construction would include graders and excavators, backhoes, drill rigs, water trucks, scrapers, sheep's foot compactors, front end loaders, concrete trucks, trucks and flatbed trailers. Cranes, man-lifts, portable welding units, line

trucks, and mechanic trucks would also be required. An estimated 8 months with approximately 60 workers would be required to expand the station.

FIGURE 8. BARREN RIDGE SWITCHING STATION EXPANSION LAYOUT



APPENDIX I: BIOLOGICAL EVALUATION

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July, 2011

CITY OF LOS ANGELES DEPARTMENT OF WATER AND POWER

Barren Ridge Renewable Transmission Project *Biological Evaluation*

PROJECT NUMBER:

116313

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Biological Evaluation Barren Ridge Renewable Transmission Project

Angeles National Forest

July 2011

**REVIEWED AND
APPROVED BY:** _____ **DATE:** _____
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Wildlife Biologist, Angeles National Forest

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APPROVED BY:** _____ **DATE:** _____
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1.0 INTRODUCTION

The City of Los Angeles Department of Water and Power (LADWP) is proposing to construct the Barren Ridge Renewable Transmission Project (BR RTP or Project) to access clean, renewable resources in the Tehachapi Mountains and Mojave Desert areas, and to improve reliability and upgrade transmission capacity. LADWP, the U.S. Department of Agriculture, Forest Service (Forest Service) and the U.S. Department of the Interior, Bureau of Land Management (BLM) are preparing a joint Environmental Impact Statement (EIS) / Environmental Impact Report (EIR) for the proposed BR RTP. LADWP is the California Environmental Quality Act (CEQA) Lead Agency, while the Forest Service and BLM are the federal Co-Lead Agencies under the National Environmental Policy Act (NEPA).

The Forest Service prepares biological evaluations as part of the NEPA process to review programs and activities to determine their potential effect upon Sensitive species. Each Regional Forester maintains a list of Sensitive species for their respective region. This report is prepared for the Forest Service sensitive species listed by the Regional Forester, R5-USDA. The Forest Service Manual (FSM) (FSM 2670.32) requires the Forest Service to prepare a biological evaluation to determine effects and to avoid or minimize project effects upon the species.

The objective of this biological evaluation is to ensure Forest Service actions do not contribute to the loss of viability of any native or desired non-native plant or animal species or trends toward Federal listing of any species. Another objective is to provide a process and standard by which to ensure that Sensitive species receive full consideration in the decision-making process. This biological evaluation includes identification of Sensitive species, description of habitat, analysis of effects, determination of effects, cumulative effects, and mitigation (FSM 2672.42).

Tables 5 and 6 identify all Forest Service sensitive species on the Angeles National Forest (ANF) and those species identified for detailed analysis in this document. All species were considered for analysis; however, only those species with suitable habitat in the Project area or species known to be present or likely to be present in the Project area were analyzed in detail in this analysis. Species without suitable habitat potentially affected by the Project, or species considered absent from the Project area, were dismissed from detailed analysis. For federally listed threatened, endangered, proposed, candidate and critical habitat evaluation, refer to the Biological Assessment prepared for the U.S. Fish and Wildlife Service (USFWS) (USFS/BLM/LADWP 2011a).

1.1 CURRENT FOREST SERVICE MANAGEMENT DIRECTION

Management direction for threatened, endangered, protected and sensitive species (TEPS) on the Forest comes from the Angeles National Forest Land Management Plan (LMP) adopted by the Record of Decision signed on September 20, 2005 (USFS 2005). Strategic Goals, Program Strategies and Tactics, Standards, and Appendices A-J of the LMP provide guidance on management of wildlife and botany resources.

Specific direction related to protection of TEPS species comes from Standards 11-44 (Record of Decision [ROD] Part 3, pages 6-10). Appendix B (Record of Determination) includes a summary of species guidance recommendations. These species guidance documents include information to assist in the development of project-specific design criteria (summarized from Land Management Plan, Appendix H).

Direction for management of wildlife and botany resources are included in Forest Service Manual 2670

1.1.1 National Forest Management Act (NFMA) for all Species:

The National Forest Management Act (NFMA) of 1976 states that "fish and wildlife habitat shall be managed to maintain viable populations of existing native and desired nonnative vertebrate species in the

planning area.” For planning purposes, a viable population shall be regarded as one which has the estimated numbers and distribution of reproductive individuals to ensure its continued existence is well-distributed in the planning area. In order to ensure that viable populations will be maintained, habitat must be provided to support at least a minimum number of reproductive individuals and that habitat must be well-distributed so that those individuals can interact with others in the planning area (36 CFR 219.19).

The regulations also mandate that “all management prescriptions shall provide for adequate fish and wildlife habitat to maintain viable populations of existing native vertebrate species and provide that habitat for species chosen under 219.19 is maintained and improved to the degree consistent with multiple-use objectives established in the plan” (36 CFR 219.27(a)(6)).

Diversity states in part: “Management prescriptions, where appropriate and to the extent practicable, shall preserve and enhance the diversity of plant and animal communities, including endemic and desirable naturalized plant and animal species” (36 CFR 219.27(g)).

1.1.2 Land Management Plan Standards

The following standards are taken from Part 3 of the LMP and are applicable to impacts to plants and wildlife as described below for the BRRTP (USFS 2005a, Part 3, pages 3 – 13).

- **S4:** Design fuelbreaks in forests to be open; averaging no more than 40 percent crown closure along the center corridor with an understory of grasses, forbs, and small shrubs. Thinning of forests should favor retention of large-diameter trees. Crown closure and understory vegetation increase gradually, moving from the inside toward the outside of the shaded fuelbreak.
- **S5:** Treat all freshly cut live or recently dead conifer stumps with a registered fungicide to prevent the establishment of annosus root disease.
- **S6:** Seed to be used on National Forest System lands will be certified to be free of noxious weeds. Where available, only locally collected native seed will be used, or seeds will be used from species that are noninvasive and nonpersistent. When available, wattles, mulch and livestock feed to be used on National Forest System lands will be certified to be free of noxious weeds.
- **S7:** There are extensive areas within and adjacent to the national forests of southern California meeting the definition of Wildland/Urban Interface (WUI) as described in the Healthy Forests Restoration Act of 2003. WUI (as defined by the Act) is a variable width up to 1.5 miles from communities at risk or as defined in individual community fire protection plans. This forest plan further identifies a direct protection buffer (WUI Defense Zone) and an indirect protection buffer (WUI Threat Zone) that fall within the broader definition WUI. A WUI Defense Zone is the area directly adjoining structures and evacuation routes that is converted to a less-flammable state to increase defensible space and firefighter safety. The WUI Threat Zone is an additional strip of vegetation modified to reduce flame heights and radiant heat. The Threat Zone generally extends approximately 1.25 miles out from the Defense Zone boundary. Yet, actual extents of Threat Zones are based on fire history, local fuel conditions, weather, topography, existing and proposed fuel treatments, and natural barriers to fire and community protection plans, and therefore could extend well beyond the 1.25 mile. The two zones together are designed to make most structures more defensible.
- **S8:** Community protection needs within the WUI Defense Zone take precedence over the requirements of other forest plan direction, including other standards identified in Part 3 of the forest plan. If expansion beyond the 300-foot minimum width of the defense zone is needed due to site-specific conditions, projects will be designed to mitigate effects to other resources to the extent possible.
- **S11:** When occupied or suitable habitat for a threatened, endangered, proposed, candidate or sensitive (TEPCS) species is present on an ongoing or proposed project site, consider species guidance documents (see [LMP Part 3] Appendix H [pages 71 – 75]) to develop project-specific

or activity-specific design criteria. This guidance is intended to provide a range of possible conservation measures that may be selectively applied during site-specific planning to avoid, minimize or mitigate negative long-term effects on threatened, endangered, proposed, candidate or sensitive species and habitat. Involve appropriate resource specialists in the identification of relevant design criteria. Include review of species guidance documents in fire suppression or other emergency actions when and to the extent practicable.

- **S12:** When implementing new projects in areas that provide for threatened, endangered, proposed, and candidate species, use design criteria and conservation practices (see Appendix H) so that discretionary uses and facilities promote the conservation and recovery of these species and their habitats. Accept short-term impacts where long-term effects would provide a net benefit for the species and its habitat where needed to achieve multiple-use objectives.
- **S13:** Manage Critical Biological land use zones so that activities and discretionary uses are either neutral or beneficial for the species and habitats for which the area was established. Accept short-term adverse impacts to threatened, endangered, and proposed species if such impacts will be compensated by the accrual of long-term benefits to habitat for threatened, endangered, and candidate species.
- **S15:** Within riparian conservation areas retain snags and downed logs unless they are identified as a threat to life, property, or sustainability of the riparian conservation area.
- **S17:** In areas outside of Wildland/Urban Interface Defense Zones and fuelbreaks, retain soft snags and acorn storage trees unless they are a safety hazard, fire threat, or impediment operability.
- **S18:** Protect known active and inactive raptor nest areas. Extent of protection will be based on proposed management activities, human activities existing at the onset of nesting initiation, species, topography, vegetative cover, and other factors. When appropriate, a no-disturbance buffer around active nest sites will be required from nest-site selection to fledging.
- **S19:** Protect all spotted owl territories identified in the Statewide California Department of Fish and Game database (numbered owl sites) and new sites that meet the state criteria by maintaining or enhancing habitat conditions over the long-term to the greatest extent practicable while protecting life and property. Use management guidelines in the species conservation strategy (or subsequent species guidance document; see [LMP Part 3] Appendix H [pages 71 – 75]) to further evaluate protection needs for projects, uses and activities.
- **S20:** Maintain a limited operating period (LOP) prohibiting activities within approximately .25 miles of a California spotted owl nest site, or activity center where nest site is unknown, during the breeding season (February 1 through August 15), unless surveys confirm that the owls are not nesting. Follow the USDA Forest Service (1993, 1994 or subsequent) protocol to determine whether owls are nesting. The LOP does not apply to existing road and trail use and maintenance, use of existing developed recreation sites, or existing special-uses, such as recreation residence tracts. When evaluating the need to implement a limited operating period, site- and project-specific factors need to be considered (use species management strategy or subsequent guidance; see [LMP Part 3] Appendix H [pages 71 – 75]).
- **S21:** California spotted owl habitat that is lost to development for a compelling reason should be mitigated up to a two-to-one basis considering quality of habitat lost, number of territories affected, reproductive history of pair(s) displaced, location, and related factors. Development includes ski area creation or expansion, new roads or trails, special-use sites and corridors, new recreation or administrative facilities, land exchanges, etc. Mitigation land should be sought first within the mountain range where the impacts occur; if this is not possible, mitigation land should be acquired within the San Gabriel or San Bernardino Mountains.
- **S22:** Except where it may adversely affect threatened and endangered species, linear structures such as fences, major highways, utility corridors, bridge upgrades or replacements, and canals will be designed and built to allow for fish and wildlife movement.
- **S24:** Mitigate impacts of on-going uses and management activities on threatened, endangered, proposed, and candidate species.

- **S25:** Conduct road and trail maintenance activities during the season of year that would have the least impact on threatened, endangered, and proposed wildlife species in occupied habitats, except as provided by site-specific consultation.
- **S27:** Use seasonal closures as specified by site-specific analysis to protect occupied bald eagle wintering, breeding, or nesting habitat.
- **S28:** Avoid or minimize disturbance to breeding and roosting California condors by prohibiting or restricting management activities and human uses within 1.5 miles of active California condor nest sites and within 0.5 miles of active roosts. Refer to California condor species account (or subsequent species guidance document; see Appendix H) for additional guidance.
- **S31:** Design new facilities or expansion of existing facilities to direct public use away from occupied habitat for threatened, endangered, proposed and candidate species.
- **S32:** When surveys for species presence/absence are done for threatened, endangered, and proposed species, use established survey protocols, where such protocols exist.
- **S33:** Manage Special Interest Areas so that activities and discretionary uses are either neutral or beneficial for the resource values for which the area was established. Accept short-term adverse impacts to these resource values if such impacts will be compensated by the accrual of long-term benefit.
- **S37:** Design and manage fuel treatments to minimize the risk that treated areas will be used by unauthorized motorized and mechanized vehicles. Mitigate impacts where such use does occur.
- **S42:** Include provisions for raptor safety when issuing permits for new power lines and communication sites (see guidelines in Appendix G). Also implement these guidelines for existing permits within one year in identified high-use flyways of the California condor, and within five years in other high-use raptor flyways. Coordinate with California Department of Fish and Game, U.S. Fish & Wildlife Service, and power agencies to identify the high-use flyways.
- **S47:** When designing new projects in riparian areas, apply the Five-Step Project Screening Process for Riparian Conservation Areas as described in Appendix E - Five-Step Project Screening Process for Riparian Conservation Areas.
- **S49:** Require fish passage instream flows associated with dams and impoundments where fish passage will enhance or restore native or selected nonnative fish distribution and not cause adverse effects to other native species.

1.1.3 Bald and Golden Eagle Protection Act (1940)

The Bald Eagle Protection Act of 1940 (16 U.S.C. 668-668c, enacted by 54 Stat. 250) protects bald and golden eagles by prohibiting the taking, possession, and commerce of such birds and establishes civil penalties for violation of this Act. Take of bald and golden eagles is defined as follows: "disturb means to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, (1) injury to an eagle, (2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or (3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior" (72 FR 31132; 50 CFR 22.3).

1.1.4 California Spotted Owl Conservation Strategy

A conservation strategy for the California spotted owl on the four Southern California national forests was completed in 2004. In accordance with the strategy, the following list of conservation practices should be considered for the California spotted owl:

- Maintain or enhance habitat conditions in all territories. All spotted owl territories identified in the statewide Fish and Game database (numbered owl sites) and new sites that meet the State criteria (see below) should be protected from habitat degradation and loss to the greatest extent practicable while protecting life and property.

- In areas without good surveys, all suitable habitat of moderate habitat value and above... should be protected from degradation or loss. In areas that have been surveyed thoroughly (e.g., San Bernardino Mountains) the national forests can protect known territories. In areas that have not been thoroughly surveyed, such as more remote portions of the Los Padres National Forest, suitable habitat should be protected even if occupancy has not been documented. In the absence of good data, all suitable habitat is considered occupied and important. Inventories should be conducted before implementing any management action that will alter habitat structure.
- Delineate and focus protection on spotted owl management areas of up to 600 acres, each comprised of a Home Range Core (HRC) containing a Protected Activity Center (PAC) and Nest Stand.
- Create a map and database of all PACs and HRCs on each Southern California National Forest.
- Update the maps and databases regularly as presence/absence surveys are conducted, projects are implemented, and/or stand conditions change.
- Where nest locations or activity centers have not yet been identified, conduct surveys in suitable habitat and map PACs and HRCs as soon as possible.
- Maintain a limited operating period (LOP) prohibiting activities within approximately ¼ mile of the nest site, or activity center where nest site is unknown, during the breeding season (February 1 through August 15) unless surveys confirm that California spotted owls are not nesting. The LOP does not apply to existing road and trail use and maintenance or continuing recreation use, except where analysis of the project or activities suggests that either existing or proposed activities are likely to result in nest disturbance. When evaluating the need to implement a limited operating period, the following site- and project-specific factors need to be considered:
 - Proximity of activity (Does the activity occur within 0.25 mile of known or suspected activity center).
 - Duration of the activity (How long will the activity occur).
 - Timing of the activity (When in the year does the activity occur? What time of day [daytime versus nighttime] does the activity occur?)
 - Type of activity (Does the activity result in human intrusion or produce loud noises which may influence the behavior of the owl?)
 - Intensity of the activity (Does the activity result in noise levels which exceed ambient levels of the area?)
 - Status of the owl (Is the site occupied by a nesting pair? Pair? Single? Did the owls attempt to nest but failed?)
 - Physiographic feature (Given the location of Alternative 2 and owl activity center, does the landscape [e.g., ridges] and vegetation provide screens or barriers to disturbance likely to result from the activity?)
- Prohibit type conversion of suitable or potentially suitable (i.e., successional stands) owl habitat. This does not apply to fuel breaks or WUI Defense Zones needed to protect human life and property.
- Loss of owl habitat to development should be mitigated up to a three to one basis considering quality of habitat lost, number of territories affected, reproductive history of pair(s) displaced, location, and related factors. Development includes ski area creation or expansion, new roads or trails, special use sites and corridors, new recreation or administrative facilities, land exchanges, etc. Mitigation land should be sought first within the mountain range where the impacts occur; if this is not possible, mitigation land should be acquired within the San Gabriel or San Bernardino Mountains.
- Make every effort possible to keep the Southern California spotted owl population intact by maintaining the amount and spatial connectivity of suitable habitat. Avoid creating additional barriers to dispersal.
- Acquire habitat where possible. Priority should be on areas with potential for commercial or residential development that contain PACs and HRCs.

- Planned new activities or uses that have potential to adversely affect owls or suitable owl habitat will be surveyed to protocol prior to conducting the activity or authorizing the use. Suitable habitat will be identified and activity centers or nests will be identified if occupied. Potentially impacted territories should be monitored for 2 years following the activity or use. Utilize the [Forest Service] 1993 survey protocol for the spotted owl in California as modified by the Spotted Owl Biologist Team:
- Within ¼ mile of activity centers, clean up trash daily at recreation sites when dumpsters reach overflow conditions (concern is the attraction of crows and ravens, which could prey on spotted owl young).
- Locate new developed recreation sites, roads, OHV trails, and other facilities or improvements outside of PACs.
- Apply Limited Operating Period guidelines to special use permits. Do not issue permits for special uses or events within ¼ mile of a nest site or activity center that would cause disturbance during nesting season, including organized motor vehicle events on Forest System roads/trails or helicopter use for movies.

2.0 PROPOSED ACTION

The Project is located in Kern and Los Angeles counties. As proposed by LADWP, it would be 76 miles in length, extending from the Barren Ridge Switching Station to Rinaldi Substation, and extending approximately 12 miles from the Castaic Power Plant to the proposed Haskell Canyon Switching Station. As shown in Figure 1, the proposed BR RTP would include the following:

- 1) Construction of approximately 61 miles of a new 230 kilovolt (kV) double-circuit transmission line from the LADWP Barren Ridge Switching Station to Haskell Canyon;
- 2) Addition of approximately 12 miles of a new 230 kV circuit on the existing double-circuit structures from Haskell Canyon to the Castaic Power Plant;
- 3) Reconductoring of approximately 76 miles of the existing Barren Ridge-Rinaldi (BR-RIN) 230 kV transmission line with larger capacity conductors between the Barren Ridge Switching Station and the Rinaldi Substation;
- 4) Construction of a new switching station in Haskell Canyon;
- 5) Expansion of the existing Barren Ridge Switching Station.

FIGURE 1. PROPOSED ACTION AND ALTERNATIVES



2.1 PROJECT COMPONENTS COMMON TO ALL ALTERNATIVES

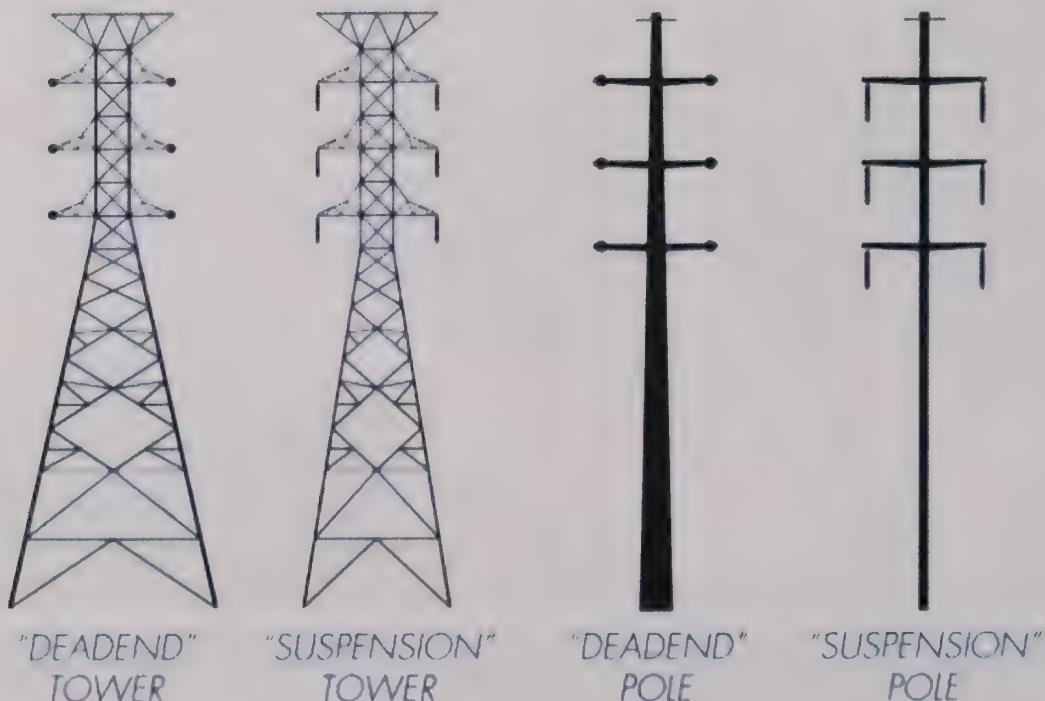
2.1.1 Component 1 - Construction of New 230 kV Double-Circuit Transmission Line

The proposed double-circuit 230 kV transmission line component of the BRRTP would consist of two alternating current (AC) circuits from the Barren Ridge Switching Station to the proposed Haskell Canyon Switching Station in Haskell Canyon.

The proposed structures for the new transmission line would primarily be self-supporting double-circuit steel lattice towers fabricated from galvanized steel members, as shown on the left side of Figure 2. Depending on the environmental conditions of the surrounding terrain, the height of the proposed lattice structures would range from 110 to 195 feet, with an average tower-to-tower span of 1,000 to 1,100 feet. Appendix B lists the structure specifications for the number of structures per mile, average span length, and average heights for towers and components. Exact structure placement would be determined during engineering surveys and detailed design studies for the selected Alternative route following the Record of Decision (ROD) on the EIS/EIR. A variety of engineering, constructability, existing access, and environmental issues would be considered during detailed structure siting within the permitted right-of-way (ROW).

“Dead-end” towers of self-supporting, steel-lattice design would be required periodically to add longitudinal strength along the line. Dead-end towers would also be used at turn (angle) locations along the line, at heavily loaded tower locations, and at specific utility crossings (e.g., other transmission lines) for added safety. Dead-ended towers are of the same basic configuration as suspension towers (non-angle structures), the difference being in the tower “arms,” insulator systems, and tower weights.

FIGURE 2. TYPES OF TOWERS



Self-supporting, tubular steel poles (TSP) have been proposed by LADWP as an available mitigation structure where appropriate to reduce potential impacts, such as conflicts with cultivation on agricultural lands. The TSPs can reduce impacts in some cases due to a smaller footprint than the proposed self-

supporting steel lattice structures; however, more TSPs per mile are necessary due to a shorter average span between structures. The TSPs would have an average height range between 95 and 180 feet, depending on the conditions of the surrounding terrain, with an average tower-to-tower span of 700 to 800 feet. Refer to Figure 2 for an illustration of the double-circuit poles.

For the majority of the alignment, the two new 230 kV circuits would be placed on new double-circuit transmission towers, but for approximately 1.5 miles, the circuits would be placed on existing four-circuit structures that are located just north of the proposed Haskell Canyon Switching Station. Between where the existing BR-RIN crosses Dry Canyon to the intersection of the Castaic transmission lines, LADWP has existing four-circuit towers with three vacant positions. The existing towers would be utilized in this section for the proposed 230 kV double circuit transmission line instead of constructing new towers. See Figure 3 for the location and illustration of the existing four-circuit towers to be utilized.

FIGURE 3. FOUR-CIRCUIT TOWERS TO BE UTILIZED



BARREN RIDGE RENEWABLE TRANSMISSION PROJECT



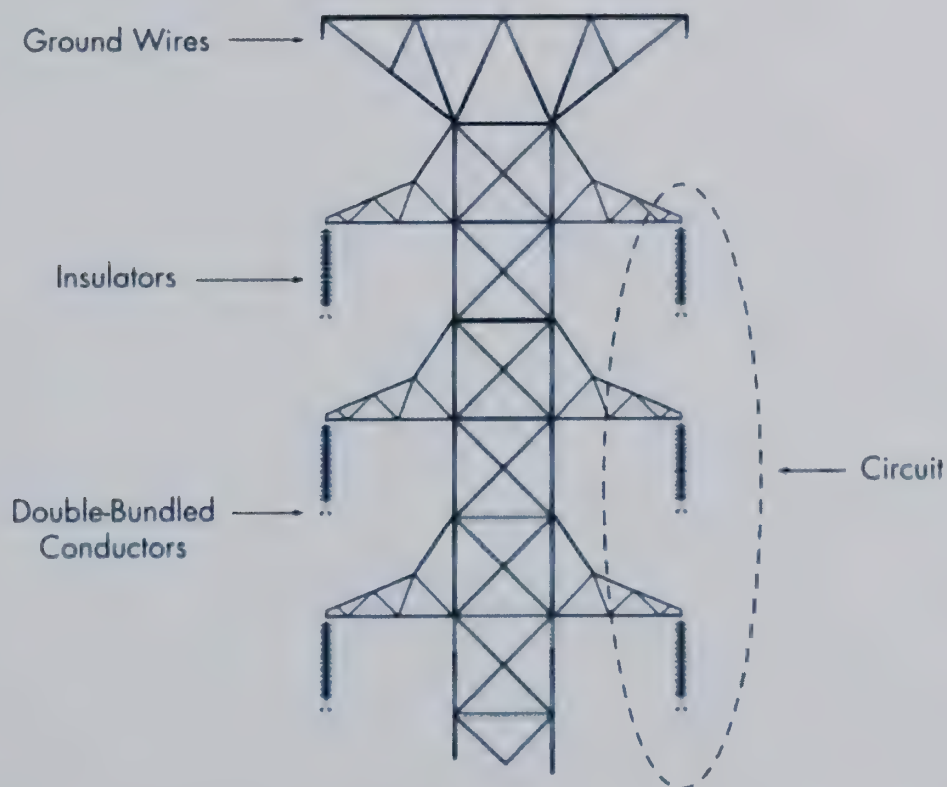
POWER
ENGINEERS, INC.



The self-supporting steel lattice structures and TSPs would utilize concrete foundations. Steel lattice structures would require four footings (one for each leg); TSPs would require single footings. Footings would be steel-reinforced concrete pier type and be cast in place. The typical design for the concrete footings for lattice structures would be between 2.5 and 5.0 feet in diameter, with an average depth of 20 feet depending on soil conditions. Typical design for single foundations for TSPs would include augured holes approximately five to seven feet in diameter and 15 to 30 feet deep, depending on conditions. Formwork steel reinforcing would be assembled in the hole prior to casting concrete in place. Reinforcing steel would become integral to the lower leg of the steel lattice structure during assembly. An above-ground concrete form placed over each hole would result in a final concrete foundation height of 0.5 to 2.0 feet above ground level.

As illustrated in Figure 4, Typical Tower Components, each tower carries conductors ("wires"), insulators, and ground wires. The conductor being considered for the new double-circuit 230 kV transmission line and installation of the Castaic – Haskell Canyon #4 circuit on existing structures is a bundled 715.5 kcmil "Starling" ACSS/AW. The reconductoring of the BR-RIN transmission line between Barren Ridge Switching Station and Rinaldi Substation would require a bundled 1,433.6 kcmil "Merrimack" ACSS/TW/HS conductor.

FIGURE 4. TYPICAL TOWER COMPONENTS



Each circuit would consist of three phases ("wires") as illustrated in Figure 4. To increase the current-carrying capability of the transmission lines and reduce power loss, the Proposed Action (Alternative 2) would utilize bundled conductors installed for each phase. The bundled conductors would consist of two conductor cables connected by a spacer. The new 230 kV double-circuit transmission line would consist of a total of six double-bundled (12 individual) wires.

Minimum conductor height above the ground, under normal operation of the line, is 30 feet. Greater clearances may be required in certain areas to allow for clearances over trees or other vegetation that could pose a risk to the operation of the transmission line. Minimum conductor clearance would dictate the exact height of each tower based on topography and safety clearance requirements.

Insulators are used to provide the physical connection of conductors to structures. These system components are made of very low conducting materials (polymer insulators) that inhibit the flow of electric current from energized conductors to ground or to other energized system elements. Insulators and their associated hardware are to be configured in an "I" assembly to support conductors while maintaining required distances between phases and grounded structures. Each "I" string would consist of six-inch diameter insulators between six and eight feet long.

To shield conductors from hazard of direct lightning strikes by transferring lightning currents into the ground, overhead ground wires (shield wires) or fiber optic ground wire would be installed on top of new structures.

Construction of a transmission line involves the following general sequence of events: surveying activities; identifying and constructing access roads; clearing ROW and tower sites (including construction yards and batch plants); installing foundations; assembling and installing the towers; clearing, pulling, tensioning, and splicing; installing ground wires and conductors; installing counterpoise; switching station tie-in; and site upkeep and site reclamation. Various phases of construction would occur at different locations throughout the construction process for the BR RTP. This would require several contractors operating at the same time and in different locations. Refer to Appendix B for a description of each construction activity.

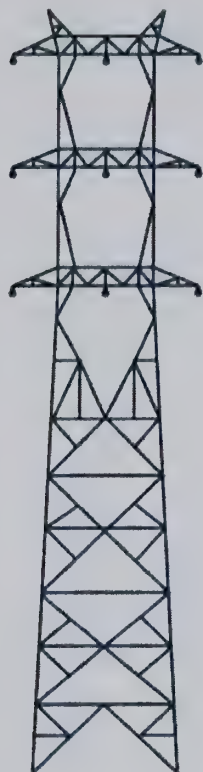
Existing paved and unpaved highways and roads would be used where possible. Roads along existing utility corridors would also be used where possible to minimize new access road construction. In locations where existing roads could be used, that are located in close proximity to the proposed or existing ROW centerlines, only new spur roads to the tower sites would be constructed. The specific locations and design of all new access and spur roads would be determined during final Project design.

It is anticipated that one or two construction yards or staging areas would be required for materials storage, construction equipment, construction vehicles, and temporary construction offices. Staging areas would be approximately five acres in size, and located centrally or near each end of the transmission line route. The staging areas would likely be located on previously disturbed land and would be level and surfaced with crushed aggregate base. The LADWP would negotiate with landowners for specific locations of the staging areas.

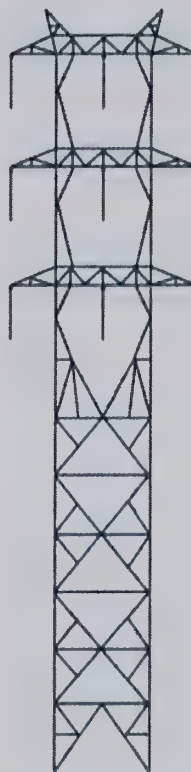
Three-Circuit Tower Mitigation

In areas where there are ROW expansion constraints and where LADWP has existing 230 kV transmission lines, LADWP is proposing to construct three-circuit towers within the existing ROW to carry the existing BR-RIN circuit and the two proposed Barren Ridge to Haskell Canyon (BR-HC) circuits. This would avoid various impacts, including the acquisition of residential property in the unincorporated communities of Willow Springs (milepost 27.1 to 27.6), Elizabeth Lake, and Green Valley (milepost 44.6 to 51.7). Refer to Figure 5 for an illustration of three-circuit tower types, and to Figure 6, the Three-Circuit Tower Mitigation Map, for proposed locations.

FIGURE 5. THREE-CIRCUIT TOWER TYPES



"DEADEND"
TOWER



"SUSPENSION"
TOWER

FIGURE 6. THREE-CIRCUIT TOWER MITIGATION



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LADWP must maintain the electrical service along the existing BR-RIN transmission line to avoid impacts to the hydroelectric power plants north of the Barren Ridge Switching Station. Therefore, a temporary transmission line would be constructed to keep the BR-RIN circuit energized during construction of the three-circuit towers. After the temporary line is constructed, the existing BR-RIN single-circuit towers would be removed to allow the new three-circuit towers to be constructed within the existing ROW. Once construction of the three-circuit towers is completed, the temporary transmission line would be removed. The temporary transmission line is expected to be in place from six to nine months.

The temporary transmission line would be 7.5 miles long and would consist of wood and steel single poles with an average height of 95 feet, a 3-foot by 3-foot footprint, and an average of eight poles per mile. Construction would occur within a new temporary 80- to 100-foot ROW. The majority of the temporary transmission line would be constructed along San Francisquito Road. Portions would also be constructed along Elizabeth Lake Road and Johnson Road. Pole placement would be adjacent to public roadways wherever possible. If necessary, temporary ROW on private property would be needed where poles could not be placed within public road ROW. The majority of poles would be direct-embedded when set in place and would not require a permanent foundation. Where additional strength is necessary at larger angle points, steel poles would be required, which could require an excavation approximately 6 feet in diameter by 20 feet deep to accommodate the concrete pier foundation that would be cast in place. Once all the poles have been constructed and the conductor installed, the existing BR-RIN circuit would be connected into the temporary line and energized. The construction would require establishment of a staging area, work areas around poles, and pull and tension sites. Access to pole sites and pull and tension sites would be from the adjacent roadways.

Approximately seven miles of the existing BR-RIN single-circuit towers would be removed, with existing ROW utilized to access the existing towers. The new three-circuit towers would be placed within the existing ROW, utilizing existing access roads. Helicopter Mitigation, as described in this section below, would be applied in steeper terrain if additional access is required. The new three-circuit tower would require a 25-foot by 30-foot structure footprint and an average of seven structures per mile; the average structure height would be 170 feet, with a maximum tower-to-tower span length of 780 feet. The construction process for the new three-circuit towers would be the same as the double-circuit towers discussed above. After completion of construction of the three-circuit towers, the temporary transmission line would be removed and all temporary staging and work area land disturbances would be restored as close to previous conditions as possible and revegetated as required.

Helicopter Mitigation

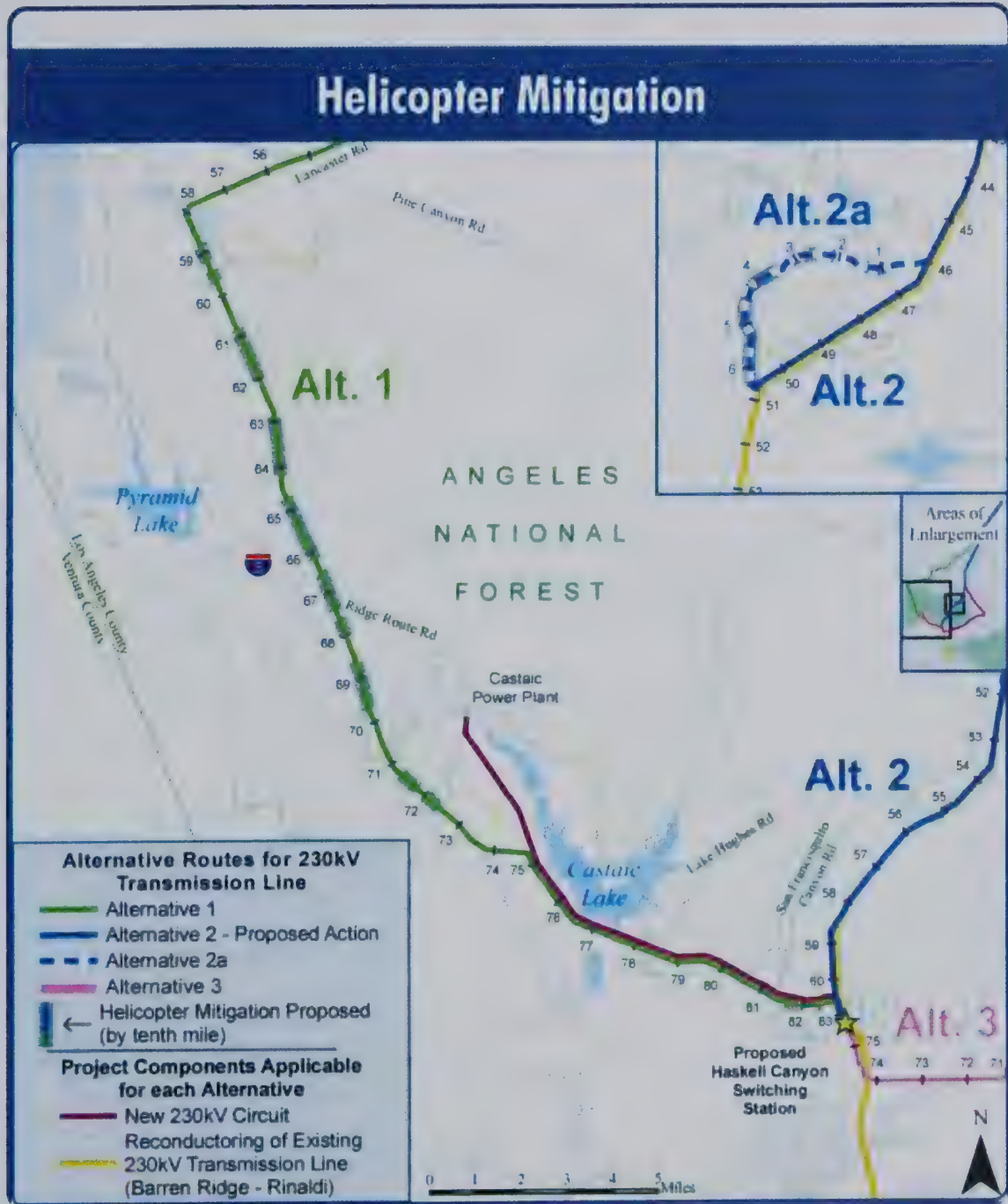
Within the ANF where the terrain is steep and access is limited, the Forest Service would require that the new double-circuit 230 kV structures be constructed with the use of helicopters (such as the Hughes 500 or Bell 212, or Sikorsky Skycrane). Although no specific locations for this mitigation have been identified for the Proposed Action (Alternative 2), as defined, it is expected the Forest Service would require the helicopter mitigation for construction in any area more than 300 feet from an existing road and with slopes greater than approximately 25 percent. Refer to Figure 7, the Identified Helicopter Mitigation Locations Map, which illustrates the identified locations for this mitigation. The use of helicopters for the construction of transmission tower structures would eliminate the need for new access roads to structure locations, and would therefore minimize land disturbance associated with crane pads, structure laydown areas, and the trucks and tractors used for delivery of structures to sites. However, the following site and ground disturbing construction activities would be required to construct the new transmission line within the identified helicopter construction areas: portable landing pads, helicopter fly yards/staging areas and associated access roads, tower structure vegetation clearing, guard structures at major crossings, and access road pullouts.

Temporary 24-foot wide access roads would be required to access the helicopter fly yards/staging areas. The transmission line materials (tower steel, conductor reels, structure hardware, etc.) would be delivered by truck to the helicopter fly yards/staging areas. Vegetation clearing may be required at these sites to ensure safe working conditions. The fly yards/staging areas would serve as helicopter support yards for fueling and maintenance, as well as for the transport of materials and personnel. Towers may also be assembled in sections at these yards prior to delivery to the tower sites. Heavy lift helicopters would then fly the towers from the yards to the tower sites.

Portable landing pads would be located at each tower site. These pads would allow helicopters to load and unload personnel, tools, and equipment necessary for construction of foundations and assembly of tower structures. Helicopter-constructed towers that would not be in close proximity to existing access roads would utilize micropile foundations. For each tower leg, micropile foundations would use a group of three to eight 6- to 9-inch diameter casings that would be drilled and grouted into the ground. The exposed portion of the pile group would be encased in a reinforced concrete cap from the top of the casings to a depth anywhere from one to eight feet below the ground surface, depending on the terrain.

Conductor installation would proceed in the same manner as the double-circuit tower installation. The equipment necessary for conductor installation would be large, heavy construction equipment that could only be brought in by truck. Some National Forest System (NFS) roads could need maintenance or improvement to allow pulling and tensioning, but no new access or spur roads would be created for conductor installation on the helicopter-constructed towers. After Project completion, any maintained access roads to helicopter fly yards/staging areas would be reduced to 16 feet.

FIGURE 7. IDENTIFIED HELICOPTER MITIGATION LOCATIONS



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2.1.2 Component 2 - Addition of New 230 kV Circuit

Between the proposed Haskell Canyon Switching Station and the existing Castaic Power Plant, LADWP proposes the addition of 12 miles of a new 230 kV transmission circuit onto existing Castaic – Olive 230 kV Transmission Line structures. The circuit would cross the unincorporated communities of Castaic and Saugus and the city of Santa Clarita. A total of 300 feet of BLM-managed public lands and four miles of NFS lands would be traversed; however, the new circuit would not require a new or additional ROW. This new circuit would be called Castaic – Haskell Canyon #4 and would utilize the same conductor (bundled 715.5 kcmil “Starling” ACSS/AW [aluminum conductor steel supported/aluminum-clad steel wire]) as that proposed for the new 230 kV transmission line between Barren Ridge and Haskell Canyon Switching Stations.

The addition of a new circuit on existing towers would require many of the same construction activities associated with a new transmission line (refer to Appendix B for a description of each construction activity). However, all work would be within existing ROW and no new towers would be constructed. Some towers may need to be modified or reinforced to carry the additional weight of the new conductor. Specific towers requiring reinforcement would be determined following detailed design of the Project. Tower reinforcement would not alter the general design or the location of the structures. This process would generally include reinforced foundations or steel member replacements. Refer to Figure 1 for a map showing the location of the new 230 kV circuit.

2.1.3 Component 3 - Reconductoring of Existing Transmission Line

LADWP proposes the reconductoring of 76 miles of the existing BR-RIN 230 kV transmission line with larger conductors from the Barren Ridge Switching Station to Rinaldi Substation. Four miles of BLM-managed public lands, 13 miles of NFS lands, and 44 miles of private property would be traversed. The existing conductors (954/ 2,312 kcmil) would be replaced with a new 1,433.6 kcmil “Merrimack” ACSS/TW/HS (aluminum conductor steel supported/trapezoidal wires/high strength) conductor. The new conductor would have a larger diameter that allows for greater electrical capacity.

The upgrade of the existing BR-RIN would also require many of the same activities of the new transmission line (surveying of ROW, rehabilitation of existing access and spur roads, clearing of ROW, conductor installation, and cleanup). Removal of the existing conductor would be used to string a pulling line, and this line would then be used to pull in the new conductor. All work would remain within the existing 250-foot-wide ROW, with no additional ROW required. Some of the towers would need to be modified, replaced, and/or have foundations reinforced or replaced to carry the additional weight of the new heavier conductor. Refer to Figure 1 for the location of the reconductoring.

2.1.4 Component 4 - Construction of New Switching Station

As a component of the BRRTP, LADWP proposes the construction of a new switching station in Haskell Canyon, south of the Angeles National Forest on LADWP-owned property at the convergence of several existing and proposed 230 kV transmission lines (the existing BR-RIN, the proposed double-circuit Barren Ridge – Haskell Canyon, existing Castaic – Northridge, Castaic – Sylmar, Castaic – Olive, and the proposed Castaic – Haskell Canyon). Refer to Figure 1 for the location of the new switching station.

The station would be approximately 500 feet by 600 feet to accommodate the necessary circuit positions, which are made up of equipment, such as steel support structures, circuit breakers, disconnect switches, and associated equipment, and a relay house and control house containing control and protective relaying equipment. The relay and control houses would each be approximately 30 feet long by 12 feet wide by 10 feet high and constructed of gray concrete block. The station yard would include a paved internal access road approximately 16 feet wide and would be enclosed by chain-link fencing with barbed-wire extension for security. The preliminary grading plan for the station is located in Appendix B.

Necessary pre-construction geotechnical investigation on-site would include six borings by a drill rig to investigate bedrock and soil stability and four cone penetration test locations after site grading to determine friction resistance for piers. The cone penetration test rig would be a small truck with a hydraulic ram assembly mounted on the back, which is used to push a 2.5-inch diameter cone into the ground to a depth up to 50 feet. Existing roads would be used to access the site.

Construction of the new Haskell Canyon Switching Station would consist of preconstruction surveys, clearing and grading of access roads, site grading and drainage development, installation of concrete foundations and steel support structures, installation of below- and above-ground electrical conduits for equipment power and control, installation of below- and above-grade grounding conductors, and installation of control and relay houses. Equipment required for station construction would include graders and excavators, backhoes, drill rigs, water trucks, scrapers, sheep's foot compactors, front end loaders, concrete trucks, trucks, and flatbed trailers. Cranes, man-lifts, portable welding units, line trucks, and mechanic trucks would also be required. Construction would require an estimated 12 months with approximately 60 workers.

Site preparation work for the station would involve clearing and grading of access roads, clearing of the switchyard site, the cut and fill grading of the site, and placement and compaction of structural fill that would serve as a base for switching station facilities. The site would be graded to maintain current drainage patterns as much as possible. A 16-foot-wide paved road and a 100-foot by 100-foot gravel parking area would be required. The yard would be covered with crushed-rock aggregate. Native vegetation would be re-established where possible outside the switchyard fence.

Following site grading and development, reinforced concrete foundations would be installed to support the steel structures and electrical equipment and control facilities. It is estimated that 1,500 cubic yards of concrete would need to be delivered to the switching station site for the foundations. Foundation work would require approximately 180 trips to the site by 40-ton, 10-yard capacity concrete trucks over a 120-day working period. Subsequent to the foundation installation, trenches would be dug to facilitate placement of copper conductors for the station grounding mat.

Multiple transmission lines would be terminated into the switching station (i.e., the new and existing Barren Ridge – Haskell and Castaic – Haskell Canyon transmission lines) and would need support and require the installation of galvanized steel structures. An existing 115 kV transmission line may need to be relocated around the proposed station. High-voltage bus work consisting of aluminum jumpers and tubing would be installed within the station.

2.1.5 Component 5 - Expansion of Existing Switching Station

LADWP proposes expansion of the existing Barren Ridge Switching Station to the east side by 235 feet by 500 feet, for a total station size of 485 feet by 500 feet (approximately 5.6 acres). The expansion area of the station would include electrical structures and equipment for the addition of transmission lines, a material staging area, roadway within the station, and a drainage area. The preliminary design layout for the station may be found in Appendix B. Refer to Figure 1 for the location of the existing switching station.

Expansion of the existing switching station would be very similar to the construction of the Haskell Canyon Switching Station as described above. Expansion would consist of preconstruction surveys, site preparation and grading, installation of reinforced concrete foundations, installation of electrical conduits for equipment power and control, and installation of structures and equipment.

Necessary pre-construction geotechnical on-site investigation would include two test pits excavated by a backhoe to investigate soil density and settlement, and four cone penetration test locations on-site to determine friction resistance for piers. The cone penetration test rig would be a small truck with a

hydraulic ram assembly mounted on the back, which is used to push a 2.5-inch diameter cone into the ground to a depth up to 50 feet. Existing roads would be used to access the site.

It is estimated that 700 cubic yards of concrete would need to be delivered to the switching station site for the foundations. Foundation work would require approximately 80 trips to the site by 40-ton, 10-yard capacity concrete trucks over a 90-day working period. Equipment required for station construction would include graders and excavators, backhoes, drill rigs, water trucks, scrapers, sheep's foot compactors, front end loaders, concrete trucks, trucks, and flatbed trailers. Cranes, man-lifts, portable-welding units, line trucks, and mechanic trucks would also be required. An estimated eight months with approximately 60 workers would be required to expand the station.

2.1.6 Project-Wide Mitigation Measures

To address potential impacts of the Proposed Project to multiple resource areas as discussed above, the following project-wide mitigation measure would be applied:

Three-Circuit Tower Mitigation (THREE-CIRCUIT) – A three-circuit lattice tower design would be implemented as described in Section 2.1.1 of this report, at the locations shown in Figure 6, Three-Circuit Tower Mitigation Map.

Helicopter Mitigation (HELICOPTER) – Helicopter Mitigation shall be implemented, as described in Section 2.1.1 of this report, in steep areas of the Angeles National Forest where access is limited. For Alternatives 1 and 2a, implementation would occur at the locations shown on Figure 7, Identified Helicopter Mitigation Map. During final design of the Project, areas other than those shown on Figure 7, including Alternatives 2 and 3, may potentially require helicopter construction of the towers. This determination would generally be made where tower sites have no existing access roads within 300 feet and slopes are greater than 25 percent. Final identification of these tower sites would be determined and agreed upon by the Forest Service, BLM and LADWP.

2.2 PROJECT COMPONENTS WITH ALTERNATIVES

2.2.1 Construction of New 230 kV Double-Circuit Transmission Line

BLM, the Forest Service, and LADWP identified the four Alternatives below to be carried forward and analyzed in the EIS/EIR, along with the No Action Alternative; they are illustrated in Figure 1. The three action alternatives are evaluated in this biological evaluation.

No Action Alternative

The No Action Alternative is required by NEPA and CEQA. Under the No Action Alternative, the construction of the new 230 kV transmission line, addition of a new circuit on existing structures from Haskell Canyon to the Castaic Power Plant, reconductoring of the existing BR-RIN 230 kV transmission line, construction of a Haskell Canyon Switching Station, and expansion of the existing Barren Ridge Switching Station would not occur. However, current operations and maintenance activities for the existing LADWP facilities would continue to occur as they are currently permitted.

Alternative 1

The new 230 kV transmission line for Alternative 1 would be 83 miles long and run from the Barren Ridge Switching Station to the proposed Haskell Canyon Switching Station, and is the westernmost alternative. The addition of 12 miles of a new 230 kV circuit from the Castaic Power Plant to the proposed Haskell Canyon Switching Station would parallel the new 230 kV transmission line for eight miles. Reconductoring of 76 miles of the existing BR-RIN 230 kV transmission line would occur in a

separate utility corridor. Alternative 1 has the potential to impact portions of unincorporated Kern and Los Angeles Counties; the communities of Holiday Valley Estates, Castaic, and Saugus; and Cities of Mojave, Santa Clarita, and Los Angeles. Eight and a half miles of the new transmission line would be constructed by helicopter.

Alternative 2 (LADWP's Proposed Action and Federal Agency Preferred Alternative)

The new 230 kV transmission line for Alternative 2 would be 61 miles long, and run from the Barren Ridge Switching Station to the proposed Haskell Canyon Switching Station, paralleling LADWP's existing BR-RIN 230 kV transmission line for the entire length. The existing BR-RIN would be reconducted as part of the Project and, for approximately 1.5 miles, the two new 230 kV circuits would be placed on existing four-circuit structures that are located just north of the proposed Haskell Canyon Switching Station. Impacts would be concentrated along this utility corridor and have the potential to affect portions of unincorporated Kern and Los Angeles Counties; the communities of Willow Springs, Antelope Acres, Elizabeth Lake, Green Valley, and Saugus; and Cities of Mojave, Santa Clarita, and Los Angeles. The addition of a new 230 kV circuit from the Castaic Power Plant to the proposed Haskell Canyon Switching Station would occur in a separate utility corridor from that of the new 230 kV transmission line.

Alternative 2a

Alternative 2a's new 230 kV transmission line from Barren Ridge Switching Station to the proposed Haskell Canyon Switching Station would be 63 miles long, and very similar to Alternative 2. They share the same proposed alignment for 56 miles, but seven miles would be re-routed around Green Valley and would create a new utility corridor through the ANF. The same communities as Alternative 2 would be potentially impacted.

Alternative 3

The new 230 kV transmission line for Alternative 3 would be 76 miles long and is the easternmost alternative. Approximately 38 miles of Alternative 3's northern alignment would parallel the reconductoring of BR-RIN, and impacts would be concentrated within the same corridor. Thirty-four miles of the southern portion of the Alternative would be placed in a separate utility corridor from the reconductoring; 11 miles of Alternative 3 would not be within an existing LADWP corridor. The installation of a new 230 kV transmission circuit would be placed on existing structures and not share a corridor with the new double-circuit 230 kV transmission line from Barren Ridge Switching Station. Alternative 3 has the potential to impact portions of unincorporated Kern and Los Angeles Counties; communities of Willow Springs, Leona Valley, Antelope Acres, Agua Dulce, Castaic and Saugus; and Cities of Mojave, Lancaster, Palmdale, Santa Clarita, and Los Angeles. Of all the Alternatives, this Alternative would have the potential to impact the most areas since the three Project components would be located in three separate areas.

2.3 GENERAL PRACTICES AND MITIGATION MEASURES

The following tables describe proposed General Practices (GPs) and mitigation measures to reduce the impact of effects that may be generated by construction of the BRRTP. These apply to preconstruction, construction, and post-construction aspects of the Project. Both the GPs and mitigation measures are considered to be part of the Project description for any Alternative that is chosen. The GPs were written for all resources of the Project. Because not all of these are applicable to biology, ones that do not apply to biology have been removed and show "*not applicable*" in the table below. The entire list can be viewed in the BRRTP Draft Environmental Impact Statement/Environmental Impact Report (DEIS/EIR) (USFS, BLM, and LADWP 2011b).

The mitigation measures are specific to biology and are in response to various impacts that could occur to vegetation, wildlife, and/or habitat. Impacts BIO-9, *The Project could potentially affect wildlife movement corridors and disturb wildlife movement*, and BIO-10, *The proposed Project may result in edge-associated impacts*, and BIO-12, *Indirect impacts to wildlife species*, do not have respective mitigation measures.

TABLE 1. GENERAL PRACTICES

Plans	
GP-1	Plan of Development & Construction, Operation and Maintenance Plans. In consultation with the Forest Service and BLM Authorizing Officers prior to construction, LADWP shall develop a Construction, Operation and Maintenance Plan (COM Plan) with the Forest Service and Plan of Development (POD) with BLM. These plans shall be attached to and become a part of the Special Use and Right-of-Way Authorizations. The COM Plan and POD shall include, at a minimum, road maintenance specifications, vegetation treatment and rehabilitation specifications, and conditions on maintenance and replacement of improvements. The agencies may combine the POD and COM plans into a single document for the Project.
GP-2	Traffic Control Plan. Prior to the start of construction, LADWP shall submit a Traffic Control Plan (TCP) to agencies with jurisdiction over public roads that would be directly affected by construction activities (where road closures or encroachments would be necessary). The Plan shall define the locations of all roads that would need to be temporarily closed due to construction activities, and also define the use of flag persons, warning signs, lights, barricades, cones, etc. for each construction closure. The plan shall include measures to avoid disruptions or delays in access for emergency service vehicles and to keep emergency service agencies informed of road closures, detours, and delays. Police departments, fire departments, ambulance services, and paramedic services shall be notified in advance of each closure by LADWP. The Plan shall also include contact information for those agencies, assign responsibility for notifying the service providers, and specify coordination procedures. Copies of the Plan shall be provided to all affected police departments, fire departments, ambulance and paramedic services.
GP-3	Hazardous Materials/Waste Management Plan. A project-specific hazardous materials management and hazardous waste management program will be developed prior to initiation of the project. The program will outline proper hazardous materials use, storage and disposal requirements as well as hazardous waste management procedures. The program will identify types of hazardous materials to be used during the project and the types of wastes that will be generated. All project personnel will be provided with project-specific training. This program will be developed to ensure that all hazardous materials and wastes were handled in a safe and environmentally sound manner. Hazardous wastes will be handled and disposed of according to applicable rules and regulations. Employees handling wastes will receive hazardous materials training and shall be trained in hazardous waste procedures, spill contingencies, waste minimization procedures and Treatment, Storage and Disposal Facility (TSDF) training in accordance with OSHA Hazard Communication Standard and 22 CCR. If degraded soil or groundwater is encountered during excavation (e.g., there is an obvious sheen, odor, or unnatural color to the soil or groundwater), it shall be excavated, tested, and disposed of in accordance with state hazardous waste disposal requirements. The Plan shall also include procedures detailing emergency responses to releases of hazardous materials. It will prescribe hazardous materials handling procedures for reducing the potential for a spill during construction, and will include an emergency response program to ensure quick and safe cleanup of accidental spills. All hazardous materials spills or threatened release, including petroleum products such as gasoline, diesel, and hydraulic fluid, regardless of the quantity spilled, will be immediately reported to the appropriate agency as outlined in the Plan if the spill has entered a navigable water, stream, lake, wetland, or storm drain, if the spill impacted any sensitive area including conservation areas and wildlife preserves, or if the spill caused injury to a person or threatens injury to public health. All construction personnel, including environmental monitors, will be aware of state and federal emergency response reporting guidelines.
GP-4	Health and Safety Plan. A Health and Safety Plan shall be prepared and implemented. The Plan shall address emergency medical services available on-site and within the project area. The Plan shall also address specific emergency response and evacuation measures.
GP-5	Stormwater Pollution Prevention Plan. A project-specific Construction Stormwater Pollution Prevention Plan (SWPPP) will be prepared and implemented prior to the start of construction. The SWPPP will utilize Best Management Practices (BMPs) to address the storage and handling of hazardous materials and sediment runoff during construction activities.

GP-6	Spill Prevention, Countermeasure, and Control Plan. LADWP will prepare or update existing Spill Prevention, Countermeasure, and Control Plan (SPCC Plan) for proposed and/or expanded switching stations if necessary or required by EPA guidelines. The plans will include engineered and operational methods for preventing, containing, and controlling potential fluid releases, and provisions for quick and safe cleanup.
GP-7	Soil Management Plan. A Soil Management Plan will be developed and implemented for construction of the proposed Project. The objective of the Soil Management Plan is to provide guidance for the proper handling, onsite management, and disposal of impacted soil that might be encountered during construction activities. The plan will include practices that are consistent with California Title 8, Occupational Safety and Health Administration (Cal-OSHA) regulations, as well as appropriate remediation standards that are protective of the planned use. The Plan will provide guidelines for identification of impacted soil, assessing impacted soil, soil excavation, impacted soil storage, verification sampling, and impacted soil characterization and disposal. In the event that potentially contaminated soils are encountered within the footprint of construction, soils will be tested and stockpiled. The appropriate Certified Unified Program Agency (CUPA) will determine whether further assessment is warranted.
GP-8	Avian Protection Plan. An Avian Protection Plan (APP) shall be developed and implemented for the construction and operation of the Project. The APP will outline measures and protocols that will be undertaken to protect avian species and is intended to protect local and migratory bird species that may occur within the Project area.
Design	
GP-9	A "dulled" metal finish shall be used on new towers or rebuilt portions of existing towers to reduce visual impacts except where otherwise dictated by visual mitigation measures.
GP-10	Nonspecular conductors shall be used to reduce visual impacts.
GP-11	Project features will be placed so as to avoid sensitive features including, but not limited to, riparian areas, water courses, and cultural sites, and/or to allow conductors to clearly span the features, within limits of standard tower design. This will minimize the amount of sensitive features disturbed and/or reduce visual contrast.
GP-12	Drainage control features will be installed, as appropriate, to minimize the amount of stormwater flow from areas of active construction. Details would be described in the SWPPP.
Construction Vehicles/Equipment	
GP-13	Only clean-burning on-road and off-road diesel engines shall be used. Where feasible, heavy-duty diesel powered construction equipment manufactured after 1996 (with federally-mandated "clean" diesel engines) shall be used.
GP-14	Construction workers shall carpool to and from the construction site when possible.
GP-15	All trucks hauling soils or other loose materials shall be covered, or maintain at least two feet of freeboard (distance between the material and the top of the truck).
GP-16	Where visible soil material is carried onto adjacent public streets, the affected streets shall be cleaned daily with water sweepers.
GP-17	All vehicles and equipment operating within 100 feet of an active stream will be inspected daily to ensure they are free of any leaks of fuel, cooling, or lubricating fluids.
GP-18	All construction vehicles shall maintain a hazardous materials spill kit, which shall include absorbent materials, tarps, small storage containers or waterproof bags, and latex gloves. Field personnel shall be made aware of these kits and instructed on how to use them.
GP-19	Refueling, or addition or changing of oil and other fluids for equipment and heavy machinery shall be performed only at approved staging and construction yards. Staging and construction yards will be located on upland sites and spill containment measures will be used to minimize risk of spill or drainage into waterways. Oil and other fluids will be disposed of as required by California law. Emergency refueling, or emergency addition or changing of oil or other fluids shall not be performed within 500 feet of natural stream channels or wetlands.
GP-20	Helicopters utilized for construction will be refueled at helicopter staging areas or local airports. Procedures will include the use of drop cloths made of plastic and drip pans and trays to be placed under refilling areas to ensure that chemicals do not come into contact with the ground. Refueling areas will be located in designated areas where absorbent pads and trays are available.
GP-21	LADWP shall contact Angeles National Forest (ANF) dispatch seven days prior to helicopter use and shall provide ANF with radio frequencies being used by the aircraft, aircraft identifiers, the number of helicopters that will be used while working on National Forest System (NFS) lands at any given time, and the flight pattern of helicopters used on NFS lands. If a wildfire occurs in the Project area, upon contact from the Forest Aviation Officer, helicopters in use by LADWP shall immediately cease construction activities and not restart aerial operations until the Forest Aviation Officer provides clearance.

GP-22	The Applicant shall clear brush and dead and decaying vegetation that would pose a fire hazard from the work area prior to starting construction and/or maintenance work. The work area includes areas of construction (e.g., tower sites, switching station site) within the transmission ROW, construction laydown areas, pull sites, access roads, parking pads, and any other sites adjacent to the ROW where personnel are active or where equipment is in use or stored. Cleared vegetation shall either be removed or chipped and spread onsite in piles no higher than six inches. This will be determined in consultation with individual appropriate land management agencies.
Access Roads	
GP-23	The alignment of any new access roads or overland routes shall follow the designated area's landform contours where possible, providing that such alignment does not additionally impact resource values.
GP-24	To the extent practical, any re-grading of access roads shall be the minimum necessary to provide safe access of construction equipment, and erosion control measures.
GP-25	Construction vehicles shall use paved roads to access the construction site when available.
GP-26	The design and use of roadways or access trails within the ANF shall be coordinated with the District and Forest Supervisor's office. The ANF may specify conditions under which use of the Forest system roads and lands shall be permitted. These conditions may include restoring or blocking access at some service trails and repairing any roadway damage or erosion damage caused by construction activities or traffic. Any project-related damage to existing Forest system roads shall be repaired at LADWP's cost.
GP-27	Any construction or installation work requiring the crossing of a roadway or railway right-of-way would incorporate the use of guard poles, netting, or similar means to protect moving traffic and structures from the activity. If necessary on state highways, continuous traffic breaks would be planned and provided.
GP-28	To minimize traffic congestion and delays during construction to the extent feasible, LADWP shall restrict all necessary lane closures or obstructions on major roadways associated with Project construction activities to off-peak periods, as feasible. Lane closures should be avoided during the 6:00 a.m. to 9:00 a.m. timeframe and the 3:30 p.m. to 6:30 p.m. timeframe, or as otherwise defined within the TCPs.
GP-29	Where Project construction and/or maintenance access could close one or multiple lanes, and where significant degradations in roadway operations could result, roadway diversions should be provided to restore the travel lanes through temporary roadway restriping.
GP-30	Where Project construction and/or maintenance access could close bicycle lanes or trails, temporary diversions should be provided where feasible to provide continued access around the construction or maintenance area.
GP-31	Where Project construction and/or maintenance access could cut-off access to nearby recreation areas, and where no alternate route exists to the recreation areas, measures should be used to provide a minimum of one lane reversible access (with flagmen) through the construction/maintenance area, or work should only be conducted during off-peak hours or evening hours only.
GP-32	Any damage to local paved roadways caused by Project construction and/or maintenance should be repaired and the roadways should be restored to their previous condition.
GP-33	In areas where soils and vegetation are particularly sensitive to disturbance, existing access roads would be repaired only in areas where they are otherwise impassable or unsafe.
Construction Areas	
GP-34	Construction activities shall be limited to the designated right-of-way and approved access and work areas as identified in the ROD and POD. Any deviations from the approved areas must be cleared with the jurisdictional agency and/or landowner.
GP-35	Grading areas shall be clearly marked and no equipment or vehicles shall disturb slopes or drainages outside of the grading area.
GP-36	No paint or permanent discoloring agents will be applied to rocks or vegetation to indicate survey or construction activity limits.
GP-37	In construction areas (e.g., marshalling yards, tower sites, spur roads from existing access roads) where ground disturbance is significant or where recontouring is required, surface restoration shall occur as required by the landowner or land management agency. The method of restoration will normally consist of returning disturbed areas back to their natural contour, reseeding, installing cross drains for erosion control as necessary, placing water bars in the road as necessary, and filling ditches.
GP-38	Soil excavated from construction activities shall not be left at work areas where the slopes exceed 10 percent or where the work area is within 100 feet of a natural stream or waterbody (receiving water). In these situations, loose soil shall be used elsewhere within the immediate area or stockpiled at the staging area. Stockpiled soil shall be managed as required by the SWPPP. No stockpiling or spreading of soil or other materials shall occur within stream channels.

GP-39	During grading or excavation work for the Project, the contractor shall observe the exposed soil for visual evidence of contamination. If visual contamination indicators are observed during construction, the contractor shall stop work until the material is properly characterized and appropriate measures are taken to protect human health and the environment. The contractor shall document the exact location of the contamination and shall immediately notify a designated Environmental Monitor and propose actions for addressing the contamination in accordance with the Soil Management Plan.
GP-40	Existing watering facilities (e.g., tanks, developed springs, water lines, wells, etc.) will be repaired or replaced, if they are damaged or destroyed by construction activities, to their pre-disturbed condition as required by the landowner or land management agency.
GP-41	Allow natural vegetation to reoccur on temporarily disturbed areas following the completion of construction.
GP-42	Weed control measures on non-federal lands shall be implemented as determined in consultation with CDFG,, and the Counties of Los Angeles and Kern Agricultural Commissions.
GP-43	Every effort will be made to minimize vegetation removal and permanent loss at construction sites. Native vegetation will be flagged for protection or stockpiled for recontouring use at the discretion of the Biological Monitor and the Construction Supervisor.
GP-44	In construction areas where recontouring is not required, vegetation will be left in place wherever possible and the original contour will be maintained to avoid excessive root damage and allow for resprouting. Disturbance will be limited to overland driving where feasible to minimize changes in the original contours.
GP-45	Use of heavy equipment within a flowing channel will be avoided if possible; however, should it be necessary, the Environmental Monitor will be notified prior to initiation of construction activities to allow adequate time for site visits and surveys, if necessary.
GP-46	Asphalt or cement equipment will not be rinsed in, nor excess products deposited into any stream or other waterway. Asphalt or concrete effluent will not be allowed to enter into stream or RCA. Effluent will be removed from standing water and prevented from entering a waterway.
GP-47	Fill material, including brush, loose soils, and other similar debris will not be deposited within a stream channel or on a stream bank.
Surveys/Monitoring	
GP-48	Biological Monitor. For areas identified as environmentally sensitive, such as streams, wetlands, riparian areas, and other environmentally sensitive areas, a biological monitor shall be present during ground disturbing construction activities. The qualified biologist shall conduct monitoring for any area subject to disturbance from construction activities that may impact biological resources. The biological monitor's duties include minimizing impacts to special-status species, native vegetation, wildlife habitat, and unique resources, as well as to identify potential issues or impacts to biological resources and report those to the authorized biologist. Where appropriate, the monitor will flag the boundaries of biologically sensitive areas and monitor any construction activities in these areas to ensure that ground disturbance activities and impacts occur within designated limits.
GP-49	Worker Environmental Awareness Program. A Worker Environmental Awareness Program (WEAP) will be implemented to educate all construction personnel of the area's environmental conditions and the environmental protection measures that must be adhered to. An environmental training program will be established to communicate environmental concerns and appropriate work practices, including spill prevention, emergency response measures, protection of biological and cultural resources, and proper Best Management Practice (BMP) implementation, to all construction and maintenance personnel.
Coordination/Permits	
GP-50	Prior to construction, LADWP shall consult with all federal, state, and local agencies, including local agency consortiums, having jurisdiction over lands affected by the proposed Project's ROW and ancillary facilities to ensure that no permanent restrictions or preclusions of their land management practices occur.
GP-51	Construction activities shall be designed to minimize work on or use of local streets. In the event that local streets must be used for more than normal traffic purposes, an encroachment permit or similar authorization shall be obtained from the County (or other agency, as applicable). Any work requiring an encroachment permit shall include preparation of a traffic control plan or other management plan to minimize effects on local streets. Any damage to local streets will be repaired, and the street system will be restored.
GP-52	Consistent with Los Angeles County Code (Section 12.08.440), no construction activities shall occur in a residential area between 7:00 p.m. and 7:00 a.m. on weekdays and Saturdays, or at any time on Sundays or holidays. In the event that construction needs to occur outside the specified hours, a variance shall be obtained beforehand.

GP-53	Incorporate riparian area avoidance and permit measures. The following actions and all permit conditions detailed within the Nationwide 12 permit and RWQCB 401 water quality certification (subject to separate approval) would be implemented by the construction manager and environmental compliance monitor(s). Before construction, qualified resource specialists would stake and flag or fence exclusion zones around all identified riparian woodlands. Such exclusion zones would include a 10-foot buffer to preclude sediment intrusion into the riparian areas. Earth-moving activities would be restricted from these zones, although essential vehicle operation and foot travel would be permitted on existing roads, bridges, and crossings. All other construction activities, vehicle operation, material and equipment storage, and other surface-disturbing activities would be prohibited within the exclusion zone. In areas where riparian habitats are unavoidable, the construction manager in consultation with the lead environmental compliance inspector would narrow the width of the centerline to the maximum extent allowable. New spur roads and existing access road improvements would be constructed and implemented using methodology that preserves existing hydrology. Tower pad clearance would be minimized to the maximum extent allowable. All temporarily disturbed riparian areas that would not be utilized for future routine operation and maintenance activities would be restored to ensure no net loss of habitat functions and values. Following construction activities, the areas would be restored as soon as practicable.
GP-54	Construction crews will avoid impacting the streambeds and banks of any streams along the route to the extent feasible. When construction or maintenance work affects the bed, bank or margins of a stream under CDFG jurisdiction, LADWP will notify CDFG as required under Fish and Game Code Section 1602, which may include securing a Streambed Alteration Agreement.
GP-55	Local emergency service providers shall be coordinated with to ensure that construction activity and any associated lane closures or traffic impacts will not significantly affect emergency response vehicles.
GP-56	LADWP would obtain appropriate Tree Removal Permits when necessary from the appropriate government agencies. In accordance with the obtained permits, LADWP shall avoid or minimize impacts to protected trees.
GP-57	LADWP shall obtain permits/approvals from any affected railway operators to ensure construction activities comply with each company's safety requirements and to avoid disruption to or congestion of rail traffic.
GP-58	LADWP shall coordinate with the City of Santa Clarita at least 30 days prior to construction in the service territory to reduce the potential interruption of bus transit services.
GP-59	All residences adjacent to the project area shall be notified at least seven days in advance of local construction of the construction schedule and the type and expected duration of local impacts. The notice shall also include a phone number for construction noise questions.

TABLE 2. PROPOSED BR RTP MITIGATION MEASURES

Mitigation Measure	Description
BIO-1	<p><i>Provide restoration/compensation for impacted sensitive vegetation communities.</i></p> <p>1a. The intent of this mitigation measure is to require LADWP to restore disturbed sites to pre-construction conditions or the desired future conditions per the Angeles National Forest (ANF) Land Management Plan (LMP). Before construction LADWP shall have a qualified biologist, where concurrence on the biologist has been provided by the USFS and BLM, document the community type and acreage of vegetation that would be subject to Project disturbance. Impacts to all oaks and native trees will be documented by identifying the species, number, location, and diameter at breast height (DBH). On non-federal lands, all protection and replacement measures shall be consistent with applicable local jurisdiction requirements, such as the Los Angeles County Oak Tree Ordinance. Tree removal shall not be permitted until replacement trees have been planted or transplanting sites are approved.</p> <ol style="list-style-type: none"> 1) For NFS and BLM lands, the USFS and BLM shall prepare a Habitat Restoration and Revegetation Plan, in discussion with LADWP, for the Project, which shall include plans for restoration, enhancement/re-vegetation and/or mitigation banking. For non-federal lands, LADWP shall prepare the Habitat Restoration and Revegetation Plan. Both plans shall include at minimum: (a) the location of the mitigation site (off-site mitigation may be required); (b) locations and details for topsoil storage; (c) the plant species to be used; (d) seed and cutting collecting guidelines; (d) a schematic depicting the mitigation area; (e) time of year that the planting will occur and the methodology of the planting; (f) a description of the irrigation methodology for container, bare-root or other planting needing irrigation; (g) measures to control exotic vegetation on site; (h) success criteria; (i) a detailed monitoring program; (j) locations and impacts to all oaks and native trees (over 3 inches DBH); (k) locations of temporary or permanent gates, barricades, law enforcement patrolling, or other means to control unauthorized vehicle access on access and spur roads as deemed necessary by the USFS and BLM (NFS and BLM lands only). 2) LADWP shall utilize a USFS/BLM approved locally collected seed mix, locally collected cuttings, bare-root stock, etc. to revegetate areas disturbed by construction activities. All habitats dominated by non-native species before Project disturbance shall be revegetated using appropriate native species. USFS/BLM approval is required for seeding on NFS/BLM land. The seed mix shall consist of native, locally occurring species collected from local seed sources. Cuttings and bare-root stock shall be of local origin. Restoration shall include the revegetation of stripped or exposed work sites and/or areas to be mitigated with vegetation native to the area. No commercially purchased seeds, stock, etc. will be accepted without the approval of the USFS and BLM on NFS/BLM lands, and seeds must be certified to be free of noxious weeds. Revegetation shall include ground cover, grass, shrub, and tree species to match disturbed areas to surrounding conditions and to restore or improve wildlife habitat quality to pre-Project or higher levels. The Habitat Restoration and Revegetation Plan shall also include a monitoring element. Post seeding and planting monitoring reporting will be yearly from years one to five and every other year from years six to ten or until the success criteria are met. LADWP shall restore temporarily disturbed areas, including existing tower locations that are to be removed by the Project, to pre-construction conditions or the desired future conditions per the ANF LMP. If the survival and cover requirements have not been met, LADWP is responsible for replacement planting to achieve these requirements. Replacement plants shall be monitored with the same survival and growth requirements as previously mentioned. 3) On NFS land, the USFS/LADWP will conduct a preconstruction evaluation of the probable impacts to all oaks and native trees in all construction-related disturbance areas. This evaluation shall be incorporated into the Habitat Restoration Plan and shall include the species and number of individuals, their DBH, location, and potential impact type. Construction within the driplines of all native trees and oak trees/shrubs, and incidental trimming or damage to trees along the proposed access/spur routes, shall not occur until the trees are evaluated by a USFS botanist or qualified arborist. This person shall identify appropriate measures to minimize tree loss, such as the placement of fence around the dripline, padding vehicles, minimizing soil removal or adding spoil around driplines, and the placement of matting under the existing dripline during construction activities. On the ANF, if a tree must have any construction-related activities such as equipment or soil staging within the drip zone, root pruning, or excessive branch pruning (greater than 25% in one year), then the tree must be monitored for five years for tree mortality. If any of these identified trees dies during the monitoring period, then the tree must be replaced at the rate appropriate to the DBH.

Mitigation Measure	Description
	<p>4) The replacement ratios (using rooted plants in liners or direct planting of acorns [for oaks]) for native trees or any oaks that are to be removed on the ANF shall be as follows: trees from 1 to 5 inches DBH shall be replaced at 3:1; trees from 5 to 12 inches shall be replaced at 5:1; trees from 12 to 24 inches shall be replaced at 10:1; trees from 24 to 36 inches shall be replaced at 15:1; and all oaks greater than 36 inches shall be replanted at a ratio of 20:1. The replacement ratio for damaged trees shall be 2:1 for trees with DBH less than 12 inches and a 5:1 ratio for trees with DBH greater than 12 inches. The DBHs for scrub oaks will be measured following California Department of Fish and Game (CDFG) guidelines. On the ANF, any oak or native tree that must be removed or killed as a result of construction or other Project-related activities shall be replaced in kind or mitigated (off-site) at a comparable value. Compliance shall be evaluated annually for years one to five and bi-annually for years six to ten (years after tree planting). Trees shall be planted at locations acceptable to the landowner or managing agency. All planting locations, procedures, and results shall be evaluated by a qualified arborist and USFS botanist. On non-federal lands, all protection and replacement measures shall be consistent with applicable local jurisdiction requirements, such as the Los Angeles County Oak Tree Ordinance.</p> <p>5) Permanent impacts on federal lands shall be determined by the appropriate federal manager (USFS and BLM) at the ratios stated below (Table BIO-MM-1) or at a comparable value. On NFS and BLM lands, impacts will be considered permanent if the trees are not likely to recover by ten years post-disturbance. Where on-site restoration is planned for mitigation of temporary impacts to vegetation communities, LADWP shall identify a Habitat Restoration Specialist, where concurrence has been provided by the USFS, to implement the method of restoration outlined by the USFS/BLM in the Habitat Restoration Plan.</p> <p>6) On USFS/BLM lands, the creation or restoration of habitat shall be monitored after mitigation site construction to assess progress and identify potential problems with the restoration site. This will be monitored on USFS/BLM lands until the success criteria are met or annually for years one to five, and bi-annually for years six to ten. Remediation activities (e.g., additional planting, removal of non-native invasive species, or erosion control) shall be taken during the ten-year period if necessary to ensure the success of the restoration effort. If the mitigation fails to meet the established performance criteria after the ten-year maintenance and monitoring period, monitoring and remedial activities shall extend beyond the ten-year period until the criteria are met or unless otherwise specified by the USFS/BLM (as appropriate). If a fire occurs in a revegetation area within the ten-year monitoring period, LADWP shall be responsible for a one-time replacement. If a second fire occurs, no replanting is required, unless the fire is caused by LADWP activity. Off-site mitigation for NFS/BLM and non-NFS/BLM lands may be required if mitigation rates exceed what can be achieved on NFS/BLM land. This may be in the form of funding for land purchase for inclusion into the Angeles National Forest, mitigation banking, removing existing structures, or comparable restoration efforts.</p> <p>1b. During and after construction, USFS/BLM-identified potential or existing entrances to Project-related disturbed areas such as access/spur roads, pull sites, staging areas, fly yards, landing zones, etc. on NFS/BLM lands shall be gated, blockaded and/or concealed in some manner and maintained to prevent the unauthorized use by the general public. Signs prohibiting unauthorized use of these disturbance areas shall be posted on these barricades if deemed necessary by the USFS/BLM. If barricades are being compromised, law enforcement patrolling may also be implemented to control unauthorized access onto Project disturbance areas.</p> <p>1c. Treat cut tree stumps with Sporax. All stumps of trees (conifers and hardwoods) resulting from activities associated with construction of the Project shall be treated with Sporax according to product directions to prevent the spread of annosus root disease. Only licensed applicators shall apply Sporax. Sporax shall not be used during rain events unless otherwise approved by the USFS.</p>

TABLE BIO-MM-1. SUMMARY OF ESTIMATED IMPACTS TO VEGETATION COMMUNITIES ON FEDERAL LANDS

Vegetation Communities	Jurisdiction	Permanent Impacts (acres)			Temporary Impact (acres)			Total Estimated Mitigation (acres)
		Estimated Impact	Ratio	Estimated Off-site Mitigation	Estimated Impact	Ratio	Estimated On-site Restoration	
Alternative 1								
Chamise Chaparral	USFS	16.73	3:1	50.19	56.06	1:1	56.06	106.25
Mojave Creosote Bush Scrub	BLM	2.68	1:1	2.68	21.81	1:1	21.81	24.49

Vegetation Communities	Jurisdiction	Permanent Impacts (acres)			Temporary Impact (acres)			Total Estimated Mitigation (acres)
		Estimated Impact	Ratio	Estimated Off-site Mitigation	Estimated Impact	Ratio	Estimated On-site Restoration	
Mojave Wash Scrub	BLM	0.25	1:1	0.25	2.05	1:1	2.05	2.30
Riversidian Sage Scrub	USFS	3.06	5:1	15.3	10.48	2:1	20.96	36.26
Southern Coast Live Oak Riparian Forest	USFS	0.05	5:1	0.25	0.38	2:1	0.76	1.01
Southern Cottonwood Willow Riparian Forest	USFS	0.42	5:1	2.1	0.86	2:1	1.72	3.82
Southern Mixed Chaparral	USFS	14.13	3:1	42.39	45.81	1:1	45.81	88.20
Southern Sycamore Alder Riparian Woodland	USFS	0.13	5:1	0.65	0.25	2:1	0.5	1.15
Southern Willow Scrub	USFS	0.32	3:1	0.96	1.30	2:1	2.6	3.56
Alternative 2								
Chamise Chaparral	USFS	10.11	3:1	30.33	39.38	1:1	39.38	69.71
Disturbed/developed	USFS	7.8	1:1	7.8	24.8	1:1	24.8	32.6
Mojave Creosote Bush Scrub	BLM	2.69	1:1	2.69	21.82	1:1	21.82	24.51
Mojave Wash Scrub	BLM	0.25	1:1	0.25	2.06	1:1	2.06	2.31
Riversidian Sage Scrub	USFS	1.84	5:1	9.2	8.85	2:1	17.7	26.9
Southern Coast Live Oak Riparian Forest	USFS	0.69	5:1	3.45	3.39	2:1	6.78	10.23
Southern Mixed Chaparral	USFS	3.24	3:1	9.72	8.77	1:1	8.77	18.49
Southern Riparian Scrub	USFS	0.33	3:1	0.99	0.66	1:1	0.66	1.65
Southern Sycamore Alder Riparian Woodland	USFS	0.87	5:1	4.35	2.2	2:1	4.4	8.75
Alternative 2a								
Chamise Chaparral	USFS	10.11	3:1	30.33	39.38	1:1	39.38	69.71
Disturbed/developed	USFS	3.24	1:1	3.24	12.72	1:1	12.72	15.96
Interior Live Oak Chaparral	USFS	2.06	5:1	10.3	5.60	2:1	11.2	21.5
Mojave Creosote Bush Scrub	BLM	2.68	1:1	2.68	21.81	1:1	21.81	24.49
Mojave Wash Scrub	BLM	0.25	1:1	0.25	2.05	1:1	2.05	2.3
Riversidian Sage Scrub	USFS	1.84	5:1	9.2	8.85	2:1	17.7	26.9
Scrub Oak Chaparral	USFS	1.46	5:1	7.3	3.19	2:1	6.38	13.68
Southern Coast Live Oak Riparian Forest	USFS	0.69	5:1	3.45	3.40	2:1	6.8	10.25
Southern Mixed Chaparral	USFS	9.03	3:1	27.09	27.88	1:1	27.88	54.97
Southern Riparian Scrub	USFS	0.33	5:1	1.65	0.66	2:1	1.32	2.97
Southern Sycamore Alder Riparian Woodland	USFS	0.81	5:1	4.05	1.64	2:1	3.28	7.33
Alternative 3								
Chamise Chaparral	BLM	0.00	1:1	0.0	0.02	1:1	0.02	0.02
Disturbed/developed	USFS	1.04	1:1	1.04	2.13	1:1	2.13	3.17
Mojave Creosote Bush Scrub	BLM	2.68	1:1	2.68	21.81	1:1	21.81	24.49
Mojave Wash Scrub	BLM	0.25	1:1	0.25	2.05	1:1	2.05	2.3
Riversidian Sage Scrub	USFS	9.57	5:1	47.85	28.19	2:1	56.38	104.23
Scrub Oak Chaparral	USFS	2.87	5:1	14.35	5.83	2:1	11.66	26.01
Southern Riparian Scrub	USFS	0.34	5:1	1.7	0.69	2:1	1.38	3.08
New Circuit								
Chamise Chaparral	USFS	8.03	3:1	24.09	23.05	1:1	23.05	47.14
Riversidian Sage Scrub	BLM	0.04	1:1	0.04	0.34	1:1	0.34	0.38
Riversidian Sage Scrub	USFS	1.98	5:1	9.9	5.96	2:1	11.92	21.82
Southern Coast Live Oak Riparian Forest	USFS	0.08	5:1	0.4	0.66	2:1	1.32	1.72
Southern Cottonwood Willow Riparian Forest	USFS	0.40	5:1	2.0	0.80	2:1	1.6	3.6
Southern Sycamore Alder Riparian Woodland	USFS	0.09	5:1	0.45	0.19	2:1	0.38	0.83

Vegetation Communities	Jurisdiction	Permanent Impacts (acres)			Temporary Impact (acres)			Total
		Estimated Impact	Ratio	Estimated Off-site Mitigation	Estimated Impact	Ratio	Estimated On-site Restoration	Estimated Mitigation (acres)
Reconductoring								
Chamise Chaparral (Segment ABG)	USFS	16.07	3:1	48.21	32.65	1:1	32.65	80.86
Disturbed/developed (Segment ABG)	USFS	7.77	1:1	7.77	25.28	1:1	25.28	33.05
Mojave Creosote Bush Scrub (Segment ABG)	BLM	2.85	1:1	2.85	23.16	1:1	23.16	26.01
Mojave Wash Scrub (Segment ABG)	BLM	0.23	1:1	0.23	1.86	1:1	1.86	2.09
Riversidian Sage Scrub (Segment ABG)	USFS	5.07	5:1	25.35	10.30	2:1	20.6	45.95
Southern Coast Live Oak Riparian Forest (Segment ABG)	USFS	3.25	5:1	16.25	6.60	2:1	13.2	29.45
Southern Mixed Chaparral (Segment ABG)	USFS	2.86	3:1	8.58	8.01	1:1	8.01	16.59
Southern Riparian Scrub (Segment ABG)	USFS	0.33	5:1	1.65	0.66	2:1	1.32	2.97
Southern Sycamore Alder Riparian Woodland (Segment ABG)	USFS	0.95	5:1	4.75	2.34	2:1	4.68	9.43
Southern Coast Live Oak Riparian Forest (Segment K)	BLM	0.02	1:1	0.02	0.04	1:1	0.04	0.06
Southern Mixed Chaparral (Segment K)	BLM	0.00	1:1	0.0	0.01	1:1	0.01	0.01

Note: The permanent and temporary impact calculations provided above are estimates based on the impact model described in Appendix C of the Biological Resources Technical Report. Therefore, acreage numbers for the habitat types listed above may be smaller than those listed in the table. Preconstruction surveys will be conducted to estimate the acreage impacts and will be based on the final design not the impact model.

Mitigation Measure	Description
BIO-2	<p><i>The following prescriptions would prevent the spread of invasive weeds into previously uninfested areas in the designated construction right-of-way.</i></p> <p>2a Prepare and implement a Weed Control Plan. LADWP/ANF/BLM shall prepare and implement a comprehensive, adaptive Weed Control Plan on NFS/BLM lands for pre-construction and construction invasive weed abatement. The long-term Weed Control Plan, including monitoring and eradication, will be defined as part of the 50 year Operations and Maintenance Permit. On the ROW easement lands administered by the USFS/BLM, the Weed Control Plan shall incorporate all appropriate and legal agency-stipulated regulations. The Weed Control Plan shall be submitted to the USFS/BLM for final authorization of weed control methods, practices, and timing before implementation of the Weed Control Plan on public lands. Weed control on BLM lands using pesticides will require an approved BLM Pesticide Use Permit. Pesticide Use Permits are issued for a maximum of three years. ROW easements on private lands shall include adaptive provisions such as wheel and equipment washing for the implementation of the Weed Control Plan. The Weed Control Plan shall include the following:</p> <ol style="list-style-type: none"> 1) A pre-construction weed inventory shall be conducted on NFS and BLM lands by surveying all areas subject to ground-disturbing activity, including, but not limited to, tower pad preparation and construction areas, tower removal sites, pulling and tensioning sites, assembly yards, and areas subject to grading for new or improved access and spur roads. Weed populations that: (1) are rated High or Moderate for negative ecological impact in the California Invasive Plant Inventory Database (Cal-IPC 2006); (2) aid and promote the spread of wildfires (such as cheatgrass, Saharan mustard, and medusa head); and (3) are considered by the USFS and/or BLM as species of priority (for NFS/BLM lands only) shall be mapped and described according to density and area covered. In areas subject to ground disturbance, weed infestations shall be treated before construction according to control methods and practices for invasive weed populations designed in consultation with the USFS/BLM. The Weed Control Plan shall be updated and utilized for eradication and monitoring post-construction.

Mitigation Measure	Description
	<p>2) Weed control treatments shall include all legally permitted herbicide, manual, and mechanical methods applied with the authorization of the USFS/BLM. The application of herbicides shall be in compliance with all State and federal laws and regulations under the prescription of a Pest Control Advisor (PCA), where concurrence has been provided by the USFS/BLM, and implemented by a Licensed Qualified Applicator, if the herbicide is in the restricted use category. The most effective herbicides with the least toxic surfactant available shall be used. Herbicides shall not be applied during or within 24 hours of a 70% chance of occurring rain event. Herbicides shall not be used within Riparian Conservation Areas (RCAs) on the ANF without approval of the USFS. In riparian areas, only water-safe herbicides, surfactants and adjuvants shall be used. Herbicides shall not be applied by spray equipment when wind velocities exceed 6 mph. Herbicides applied by sponge or paintbrush to cut stumps shall not be applied at over 15 mph. In areas containing special-status plants or animals, there will be a 5- to 70-foot buffer where herbicides are not used. The size of the buffer will be determined and flagged for avoidance by an approved botanist/biologist, based on phenology or life cycle at time of treatment, rareness and imperilment of species, vulnerability of herbicide being used, concentration of herbicide used based on no observed effect concentrations and/or environmental conditions and terrain. Where manual and/or mechanical methods are used, disposal of the plant debris will follow the regulations set by the USFS/BLM. The timing of the weed control treatment shall be determined for each plant species in consultation with the USFS/BLM (on NFS/BLM lands) with the goal of controlling populations before they start producing seeds. Pre-emergent herbicides will only be used in areas that have a very low potential for supporting native plant species after disturbance, as determined by an agency botanist.</p> <p>For the preconstruction and construction of the Project, measures to control the introduction and spread of noxious weeds in the Project work area shall be taken as follows.</p> <p>3) On the ANF and BLM lands, surveying for new invasive weed populations and the monitoring of identified and treated populations shall be required at all sites impacted by construction (tower pads, staging areas, landing zones, etc.), including access/spur roads disturbed during the Project. Surveying and monitoring for weed infestations shall occur annually for years one to five and bi-annually for years six to ten, or until success criteria are met. Treatment of all identified weed populations shall occur at an appropriate interval so as to meet the success criteria. When no new seedlings or resprouts are observed at treated sites for three consecutive, normal rainfall years, the weed population can be considered eradicated and weed control efforts may cease for that impact site.</p> <p>4) During Project preconstruction and construction, all seeds and straw materials shall be weed-free rice straw, and all gravel and fill material shall be certified weed-free by the county Agriculture Commissioners' Offices. Any deviation from this must be approved by a USFS/BLM botanist. All plant materials used during restoration shall be native, certified weed-free, and approved by the USFS/BLM.</p> <p>5) Before beginning preconstruction activities, the USFS, in coordination with LADWP, will determine suitable locations to install field washing stations as part of the Weed Control Plan. Before commencing construction activities, LADWP shall document that all vehicles, equipment, and tools used on the Project have been cleaned at existing construction yards or legally operating car washes. This is a one-time requirement designed to address the potential of new species of weeds being transported from outside the area. If, however, vehicles, equipment, or tools are used or driven off paved roads on non-NFS lands, washing must occur before entering USFS lands.</p> <p>During Project preconstruction and construction, all vehicles, equipment, or tools which will be used outside of permitted Project roadways shall be washed at the nearest station before operating off-road. In other areas also designated by the USFS, vehicles, equipment, and tools will be washed at the nearest station after exiting those areas. Vehicles that do not leave permitted Project roadways are not required to be washed after the initial washing described above. All washing shall take place where rinse water is collected and disposed of in either a sanitary sewer or landfill, unless otherwise approved by the USFS.</p> <p>Written daily logs shall be kept for all vehicle/equipment/tool washing that states the date, time, location, type of equipment washed, methods used, and staff present. The log shall include the signature of a responsible staff member. Logs shall be available to the USFS for inspection at any time and shall be submitted to the USFS permit administrator on a monthly basis.</p> <p>6) During Project operation and maintenance activities, weeds shall be cleared and disposed of in assembly yards, helicopter landing areas, tower pads, spur roads, staging areas, and any other disturbance areas</p>

Mitigation Measure	Description
	<p>in a USFS/BLM-approved method.</p> <p>2b Remove weed seed sources from construction access routes. Before construction, LADWP shall initiate invasive species eradication. Populations to be treated will be small to moderate and isolated, but have the potential to spread aggressively during construction. Post-construction, these isolated populations will be included and treated according to the restoration plan. Per the Forest Service Manual (FSM) 2080 Best Management Practice (BMP) guideline, LADWP shall also remove or reduce sources of weed seed along the travel routes associated with Project construction. Weed species identified along the Alternatives and associated access roads include tocalote, artichoke thistle, tree tobacco, saltcedar, slender wild oat/wild oat, riggut brome, soft chess brome, red brome, cheatgrass, blessed thistle, filaree, shortpod mustard, prickly lettuce, common horehound, yellow sweetclover, rabbit foot grass, Mediterranean grass, sowthistle, rat-tail fescue, tree-of-heaven, giant reed grass, yellow starthistle, bull thistle, fennel, perennial pepperweed, and black locust. To prevent the introduction or control the spread of noxious weeds, hand removal or other control methods will be implemented to reduce seed production during Project construction. Following Project approval and during the time of year when weed species can be observed and identified, LADWP shall identify, using a qualified plant ecologist, any other weed seed sources that could contribute to Project-related weed spread on the ANF and BLM lands. Target infestations identified by Project surveys should be controlled before construction. LADWP shall initiate eradication of the target infestations discovered during pre-construction surveys along construction routes.</p> <p>2c Remove weed seed sources from assembly yards, staging areas, tower pads, pull sites, landing zones, and spur roads. Before construction and during each year of use for construction at all assembly yards, staging areas, tower pads, pull sites, landing zones, and spur roads within the ANF and BLM lands, weed-infested areas should be hand-weeded and/or treated as appropriate for the individual weed species under the guidance of a qualified plant ecologist or restoration ecologist, where concurrence on the ecologist has been provided by the USFS/BLM. Unless otherwise authorized by the USFS/BLM, weed control efforts in these areas shall be timed annually to reduce shortpod mustard, tocalote, bromes and other noxious weed seed production, by hand-removing or weed-whacking infestations when flowering has just started, but before seeds have been produced. All plant debris shall be disposed of at a USFS/BLM approved location. Weed control efforts shall commence in early spring (February – March), as indicated annually by a qualified plant ecologist or restoration ecologist in coordination with LADWP and USFS/BLM botanist or weed specialist.</p> <p>2d Use of Herbicides to Control Exotic Weeds. LADWP may use herbicides where deemed necessary for the control of exotic weeds within the Project area. Weed control should be species-specific, and herbicides should be applied only if necessary after considering alternate methods or as part of a proven eradication strategy for that weed species. To minimize potential impacts, weed control treatments shall include all legally permitted herbicide, manual, and mechanical methods applied with the authorization of the USFS. Due to typically large seed banks and the ability of some weed species to vigorously resprout following removal methods, most species require more than one round of treatment, or require a different follow-up treatment method after the initial removal occurs. Any herbicide use on NFS lands would be subject to the review and approval of the appropriate USFS personnel and in coordination with LADWP.</p>
BIO-3	<p><i>Incorporate riparian area avoidance and permit measures.</i></p> <p>The following actions and all permit conditions detailed within the Nationwide 12 permit and RWQCB 401 water quality certification (subject to separate approval) would be implemented by the construction manager and environmental compliance monitor(s).</p> <p>3a LADWP shall not construct or modify any structure, culvert, or bridge or modify any habitat on NFS lands in RCAs without the authorization of the USFS. Vegetation removal or road construction shall not occur in RCAs during the breeding season for nesting birds (February 1 to August 15) unless otherwise approved by the USFS. LADWP shall prepare and implement a USFS RCA Treatment Plan for the Project. This Plan shall include the specific activities that will occur at each of the RCA points crossed by the Project, including the amount and type of vegetation to be cleared, the type of road crossing or improvement allowed for wet and dry crossings, and the methods that would be employed to reduce the effects of the Project on water quality. The Plan shall include seasonal restrictions for vehicle or equipment passage, restrictions on what activities may occur (such as grading, vegetation removal or tree trimming), monitoring requirements, and restoration requirements. This Plan shall be submitted to the USFS for approval before construction or the grading of any access road.</p> <p>3b Before construction, qualified resource specialists shall stake and flag or fence exclusion zones around all</p>

Mitigation Measure	Description
	<p>identified riparian areas. Such exclusion zones will include a 10-foot buffer to preclude sediment intrusion into the riparian areas. Earth-moving activities shall be restricted from these zones, although essential vehicle operation and foot travel will be permitted on existing roads, bridges, and crossings. All other construction activities, vehicle operation, material and equipment storage, and other surface-disturbing activities will be prohibited within the exclusion zone.</p> <p>3c In areas where riparian habitats are unavoidable, the construction manager, in consultation with the lead environmental compliance inspector and USFS, shall narrow the width of the road through the area to the minimum extent required for safe travel. New spur roads and existing access road improvements shall be constructed and implemented using methodology that preserves existing hydrology.</p> <p>3d Towers shall not be constructed in riparian areas.</p> <p>3e All temporarily disturbed riparian areas that would not be utilized for future routine operation and maintenance activities shall be restored according to the guidelines of the Habitat Restoration Plan to the extent required to ensure no net loss of habitat functions and values. Following construction activities, the areas will be restored as soon as practicable.</p> <p>3f Permanent, unavoidable losses of riparian areas will be mitigated by restoration and/or preservation of off-site habitats, as outlined in the Habitat Restoration Plan. The final mitigation and off-site restoration locations will be determined in consultation with LADWP and the responsible agency(s). Mitigation acreage ratios will be consistent with those listed in Table BIO-MM-1.</p>
BIO-4	<p><i>Provide restoration/compensation for affected jurisdictional areas.</i></p> <p>4a Impacts to areas under jurisdiction of the USACE, RWQCB, USFS and CDFG shall be avoided to the extent feasible. Where avoidance of jurisdictional areas is not feasible, including emergency repairs, and access/spur roads within RCAs, the applicant shall provide the necessary mitigation required as part of wetland permitting. This will include creation, restoration, and/or preservation of suitable jurisdictional habitat along with adequate buffers to protect the function and values of jurisdictional area mitigation. The location(s) of the mitigation will be determined in consultation with LADWP and the responsible agency(s) as part of the wetland permitting process.</p> <p>4b Measures 3a, b, c, and d will also be incorporated to avoid and protect jurisdictional areas.</p>
BIO-5	<p><i>Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife.</i></p> <p>5a. Conduct preconstruction surveys in locations where potential habitat exists for special-status species. If sign or habitat is detected during the surveys, construction activities will be monitored by biologists, or exclusion fencing will be placed around work areas. If individuals are found within the area of potential effect, they will be relocated to areas (as authorized by the Biological Opinion for federally listed species) that are not potentially impacted by the Project.</p> <p>5b. Cover all steep-walled trenches or excavations used during construction to prevent entrapment of wildlife (e.g., reptiles and small mammals). If the trenches or excavations cannot be covered, a ramp that will sufficiently allow wildlife to escape shall be placed into the trench or excavated area, or exclusion fencing (i.e., silt fencing) shall be installed around the trench or excavation to prevent entrapment of wildlife. Open trenches, or other excavations that could entrap wildlife, shall be inspected by the qualified biologists a minimum of three times per day and immediately before backfilling. Furthermore, employees and contractors shall look under vehicles and equipment for the presence of wildlife before moving the vehicle or equipment. If wildlife is observed, no vehicles or equipment would be moved until the animal has left voluntarily or is removed by the qualified biologist. Should a dead or injured special-status species be found in a trench or excavation or anywhere in the construction zone or along an access road, the qualified biologist shall contact BLM and/or USFS (for activities on land managed by the agencies) and the Wildlife Agencies within 48 hours of the finding. The qualified biologist shall report the species found, the location of the finding, and the cause of death (if known), and shall submit a photograph and any other pertinent information.</p>
BIO-6	<p><i>Implement a Worker Environmental Awareness Program.</i></p> <p>A qualified biologist(s) shall conduct a detailed biological Worker Environmental Awareness Program (WEAP) for all Project personnel before any construction or activities within the Project footprint. The WEAP shall include discussions of Project permits and brief summaries of their conditions; discussions of agency involvement, their applicable sensitivity measures, and relevant environmental protection legislation (e.g., the Endangered Species Act, the Migratory Bird Treaty Act); descriptions of special-status species and other sensitive resources that could exist in the Project area, along with their locations, legal status and protections; and a review of all measures to be</p>

Mitigation Measure	Description
	<p>implemented for avoidance of these sensitive resources. The final list of wildlife species to be included in the WEAP may be reduced at the discretion of the biologist with concurrence from applicable agencies. BIO-6 is in addition to LADWP's General Practice (GP) 69 WEAP, which does not provide the level of biological detail this mitigation measure provides.</p> <p>6a. Training materials and briefings shall also include the consequences of non-compliance with these acts; identification and values of plant and wildlife species and significant natural plant community habitats; fire protection measures; sensitivities of working on NFS lands and identification of USFS sensitive species; hazardous substance spill prevention and containment measures; a contact person in the event of the discovery of dead or injured wildlife; and review of mitigation requirements. Discussion of GPs and BMPs shall include topics such as appropriate work limits, avoiding the spread of non-native plant species, fire safety, wildlife avoidance, trash and debris collection, spill prevention and containment protocol, and appropriate protocol for passage and/or construction near riparian zones. Sightings of sensitive wildlife species or harmful encounters with any wildlife species shall be reported to the Project biologist immediately for evaluation and, as necessary, reporting to agencies.</p> <p>6b. The WEAP shall also include the protocol to be followed when road kill is encountered in the work area or along access roads to minimize potential for additional mortality of scavengers, including listed species such as the California condor. On NFS/BLM lands, road kill shall be reported to the USFS/BLM or other applicable agency within 24 hours. On non-NFS lands, road kill shall be reported to the appropriate local animal control agency within 24 hours. Training materials and a course outline shall be provided to the USFS/BLM for review and approval at least 30 days before the start of construction. Maps showing the location of special-status wildlife, fish, or populations of rare plants, exclusion areas, or other construction limitations (e.g., limited operating periods) will be provided to the environmental monitors and construction crews before ground disturbance.</p> <p>6c. The training shall be conducted for all crew members present for the start of construction. If new crew members are brought to the Project after this time, they shall take part in the WEAP before beginning construction work; if the biologist is not available at this time, new crew members shall be given a summary handout of the WEAP until the full WEAP can be administered by the Project biologist, to be conducted no more than one workweek following the crew members' assignment to the Project. All crew members who have completed the WEAP shall submit their names to a list to be updated continuously and furnished to agencies upon request. No construction worker may work in the field for more than five days without participating in the WEAP.</p>
BIO-7	<p><i>Impacts to Raptors.</i></p> <p>7a. If Project construction activities cannot occur completely outside the bird breeding season, then pre-construction surveys for active nests shall be conducted by a qualified biologist within 1,200 feet of the construction zone no more than seven days before the initiation of construction that would occur between February 1 and August 15. The required survey dates may be modified based on local conditions (e.g., high altitude locations) with the approval of the CDFG, BLM, and/or USFS. LADWP shall be responsible for designating qualified biologists who can conduct pre-construction surveys and monitoring for breeding birds. The résumé of the proposed biologists will be provided to the BLM and USFS for concurrence before ground disturbance. If breeding birds with active nests are found, a biological monitor shall establish a species-specific buffer around the nest for ground-based construction activities and a one-mile buffer for helicopter use if helicopters are flying below 300 feet, and no activities will be allowed within the buffer(s) until the young have fledged from the nest or the nest fails. If nesting bald or golden eagles are identified, a 660-foot no activity buffer will be implemented. The buffer (660-foot eagle and one-mile helicopter) may be adjusted to reflect existing conditions, including ambient noise, topography, and disturbance, with the approval of the U.S. Fish and Wildlife Service (USFWS), CDFG, BLM or USFS, as appropriate (USFS 2005). On NFS lands, the USFS shall apply the USFS Land Management Plan Standard S18 (Part 3 of the Land Management Plan), which states, "Protect known active and inactive raptor nest areas. Extent of protection will be based on proposed management activities, human activities existing at the onset of nesting initiation, species, topography, vegetative cover, and other factors. When appropriate, a no-disturbance buffer around active nest sites will be required from nest-site selection to fledging." If for any reason a bird nest must be removed during the nesting season, LADWP shall provide written documentation providing concurrence from the USFWS and CDFG authorizing the nest relocation. On NFS lands, this will include coordination and written approval from the USFS. On BLM lands, this will include coordination and written approval by the BLM. LADWP shall provide a written report documenting the relocation efforts. The report shall include what actions were taken to</p>

Mitigation Measure	Description
	<p>avoid moving the nest, the location of the nest, what species is being relocated, the number and condition of the eggs taken from the nest, the location of where the eggs are incubated, the survival rate, the location of the nests where the chicks are relocated, and whether the birds were accepted by the adopted parent.</p> <p>7b. Before construction, LADWP shall identify all existing raptor nests that would be affected by Project construction. LADWP shall coordinate with the USFWS, CDFG, USFS and BLM for the proposed removal of nests that may present safety issues associated with the construction activities. All nest removals shall occur after the nest is demonstrated to be inactive by a qualified biologist and have been shown to not result in take as defined by the Migratory Bird Treaty Act (MBTA).</p>
BIO-8	<p><i>Avoid nesting season and limit disturbance of nesting birds.</i></p> <p>LADWP shall conduct pre-construction surveys for nesting birds if construction and removal activities are scheduled to occur during the breeding season. Surveys shall be conducted in areas within 500 feet of tower sites, laydown/staging areas, substation sites, access/spur road locations, or any other area subject to ground disturbance. Surveys for birds shall be conducted for all areas from February 1 to August 15. The required survey dates may be modified based on local conditions (e.g., high altitude locations) with the approval of the CDFG and/or USFS. LADWP shall be responsible for designating qualified biologists who can conduct pre-construction surveys and monitoring for breeding birds. The résumé of the proposed biologists will be provided to the USFS for concurrence before ground disturbance.</p> <p>If breeding birds with active nests are found, a biological monitor shall establish a 300-foot buffer around the nest for ground-based construction activities and a one-mile buffer for helicopter use if helicopters are flying below 300 feet, and no activities will be allowed within the buffer(s) until the young have fledged from the nest or the nest fails. If nesting bald or golden eagles are identified, a 660-foot no activity buffer will be implemented. The 300-foot (or 660-foot eagle and one-mile helicopter) buffer may be adjusted to reflect existing conditions, including ambient noise, topography, and disturbance with the approval of the USFWS, CDFG, or USFS, as appropriate and in coordination with LADWP. On NFS lands, the USFS shall have the authority to define/redefine such buffers. The biological monitors shall conduct regular monitoring of the nest to determine success/failure and to ensure that Project activities are not conducted within the buffer(s) until the nesting cycle is complete or the nest fails.</p> <p>The biological monitors shall be responsible for documenting the results of the surveys and the ongoing monitoring and will provide a copy of the monitoring reports for impact areas to the respective agencies (e.g., on NFS lands documentation will be provided to the Forest Biologist). If for any reason a bird nest must be removed during the nesting season, LADWP shall provide written documentation providing concurrence from the USFWS and CDFG authorizing the nest relocation. On NFS lands, this will include coordination and written approval from the USFS. LADWP shall provide a written report documenting the relocation efforts. The report shall include what actions were taken to avoid moving the nest, the location of the nest, what species is being relocated, the number and condition of the eggs taken from the nest, the location of where the eggs are incubated, the survival rate, the location of the nests where the chicks are relocated, and whether the birds were accepted by the adopted parent.</p>
BIO-9	<i>No mitigation measures required for Impact BIO-9.</i>
BIO-10	<i>No mitigation measures required for Impact BIO-10.</i>
BIO-11	<p><i>Reduce avian electrocutions/collisions on transmission lines.</i></p> <p>Raptor safety protection will be required on tower/conductor (lines) in appropriate locations. The Project would have minimum clearance between phase conductors or between phase conductors and grounded hardware, as recommended by the Avian Power Line Interactive Committee (APLIC 2006), that are sufficient to protect even the largest birds, such as California condor, and therefore would present little to no risk of bird electrocution.</p> <p>New Project structures shall be designed to implement collision-reducing techniques as described in the latest version of the APLIC guidelines. Devices such as swan wrapping or other similar functioning devices may be required if areas are identified as being a hazard to birds. In addition, per General Practice (GP) 8, an Avian Protection Plan will be developed for this Project that will include avian collision protocols.</p>
BIO-12	<i>No mitigation measures required for Impact BIO-12.</i>
BIO-13	<p><i>Protect special-status plant species and their habitat.</i></p> <p>13a. Conduct preconstruction surveys for State and federal Threatened, Endangered, Proposed, Petitioned, Candidate, USFS Sensitive, USFS Watch, BLM Sensitive, and California Native Plant Society (CNPS)</p>

Mitigation Measure	Description
	<p>listed plants and avoid any occurrences of these plants. LADWP shall conduct pre-construction surveys for State and federally listed Threatened and Endangered, Proposed, Petitioned, and Candidate plants in a 250-foot radius around all areas subject to ground-disturbing activity, including, but not limited to, tower pad preparation and construction areas, tower removal sites, pulling and tensioning sites, assembly yards, and areas subject to grading for new access roads. The surveys shall be conducted during the appropriate blooming period(s) by a qualified plant ecologist/biologist according to protocols established by the USFWS, CDFG, USFS, BLM, and CNPS. The résumé of the proposed biologists will be provided to the USFS and BLM for concurrence before ground disturbance. The completion of these surveys shall be coordinated with the federal land manager. All listed plant species found shall be marked and avoided. If a federally listed plant species cannot be avoided on private land, consultation with USFWS will occur.</p> <p>13b. Before site grading, any populations of listed plant species identified during the surveys shall be protected by a buffer zone. The buffer zone shall be established around these areas and shall be of sufficient size to eliminate potential disturbance to the plants from human activity and any other potential sources of disturbance, including human trampling, erosion, and dust. The size of the buffer will depend upon the proposed use of the immediately adjacent lands, and include consideration of the plant's ecological requirements (e.g., sunlight, moisture, shade tolerance, edaphic physical and chemical characteristics) that are identified by a qualified plant ecologist and/or Forest botanist. At minimum, the buffer shrub species shall be equal to twice the drip line (i.e., two times the distance from the trunk to the canopy edge) to protect and preserve the root systems of the plant. The buffer for herbaceous species shall be, at minimum, 50 feet from the perimeter of the population or the individual. A smaller buffer may be established, provided there are adequate measures in place to avoid the take of the species, with the approval of the USFWS, CDFG, USFS, and BLM and in coordination with LADWP. If impacts to listed plants are determined to be unavoidable, the USFWS shall be consulted for authorization, through the context of a Biological Opinion. Additional mitigation measures to protect or restore listed plant species or their habitat may be required by the USFWS before impacts are authorized, whichever is appropriate.</p> <p>13c. Impacts to non-listed plant species (i.e., USFS Sensitive, CNPS List 1,2 and 4 species) shall first be avoided where feasible, and, where not feasible, impacts shall be compensated through reseedling (with locally collected seed stock), or other USFS or BLM approved methods. For USFS lands, if the ANF determines Project activities will result in the loss of a significant portion of the known individuals of USFS Sensitive plant species, and reseedling/transplanting are not feasible options, LADWP shall preserve existing off-site occupied habitat that is not already part of the public lands in perpetuity at a 2:1 mitigation ratio (habitat preserved: habitat impacted). This ratio will apply only to specific acreage inhabited by special-status plant species that are removed during construction, and will supersede ratios listed in Table BIO-MM-1 regardless of habitat type. The determination of a significant rare plant population loss will be decided by the ANF botanist on a species and location basis, after available literature, research, and overall species distribution are reviewed. If avoidance, reseedling/transplanting, and, preservation of off-site habitat occupied by the impacted species are not found to be possible, the ANF will consider off-site restoration of degraded ANF lands and/or preservation of non-public lands with suitable habitat for the impacted species. The preserved habitat shall be of superior or similar habitat quality to the impacted areas in terms of soil features, extent of disturbance, habitat structure, and dominant species composition, as determined by a qualified plant ecologist.</p> <p>13d. All special-status plant species impacted by Project activities shall be documented in an annual report and submitted to the federal land manager (USFS and BLM) until the success criteria outlined in the Habitat Restoration Plan are met. Where reseedling has occurred, LADWP shall track the success of the plants during the course of the annual restoration monitoring. This information shall be submitted as part of the annual report to the federal land manager (USFS and BLM).</p>
BIO-14	<p><i>Protect western yellow-billed cuckoo, southwestern willow flycatcher, least Bell's vireo, and their habitat.</i></p> <p>14a All Project activities taking place within suitable habitat for the western yellow-billed cuckoo, southwestern willow flycatcher, and least Bell's vireo shall be conducted from November through early March, which is a period outside their breeding seasons (Sedgwick 2000, Sogge 2000, Brown 1993, Kus 2002, Hughes 1999). If these activities cannot be avoided during the breeding season, the following measures shall apply:</p> <p>14b If construction activities must occur during the breeding season in areas that have the potential to support listed riparian species, a qualified ornithologist shall conduct protocol surveys of the Project and adjacent areas within 500 feet to determine if this species is present within the area and to determine breeding status. USFWS protocol surveys will be conducted for southwestern willow flycatcher, least Bell's vireo, and</p>

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	<p>western yellow-billed cuckoo (if no protocols exist, the appropriate land management agency will establish the protocols to be used). In known occupied habitat for listed riparian birds, LADWP shall only conduct focused surveys of the Project and adjacent areas within 500 feet. The surveys shall be of adequate duration to verify potential nest sites if work is scheduled to occur during the breeding season. If breeding is confirmed, the USFWS-recommended buffers will be applied and no activities will occur within that buffer.</p> <p>14c Protocol or focused surveys, as appropriate, should be conducted within one year of start of construction. However, on NFS lands, annual surveys in suitable habitat may be required during construction. These surveys may be modified through the coordination with the USFWS, CDFG, USFS, LADWP and the BLM based on the condition of habitat, the observation of the species, or avoidance of riparian areas during the breeding season.</p> <p>14d If a territory or nest is confirmed, the USFWS and CDFG shall be notified immediately. On NFS or BLM lands, these agencies would be notified immediately. In coordination with the USFWS, CDFG and the appropriate land management agency, a 300-foot disturbance-free buffer shall be established and demarcated by fencing or flagging. This buffer may be adjusted, provided noise levels do not exceed 60 dB(A) hourly Leq at the edge of the nest site as determined by a qualified biologist in coordination with a qualified acoustician. If the noise meets or exceeds the 60 dB(A) Leq threshold, or if the biologist determines that the construction activities are disturbing nesting activities, the biologist shall notify the construction manager, and the construction manager, in consultation with the biologist and USFS, has the authority to halt the construction and shall devise methods to reduce the noise and/or disturbance in the vicinity. This may include methods such as, but not limited to, turning off vehicle engines and other equipment whenever possible to reduce noise, installing a protective noise barrier between the nest site and the construction activities, and working in other areas until the young have fledged. If noise levels still exceed 60 dB(A) Leq hourly at the edge of nesting territories and/or a no-construction buffer cannot be maintained, construction shall be deferred in that area until the nestlings have fledged. All active nests shall be monitored on a weekly basis until the nestlings fledge. No construction or vehicle traffic shall occur within this buffer during the breeding season for these species.</p> <p>14e The nest must be monitored by a qualified biologist during the construction activities. If the monitor determines that Project activities are disturbing or disrupting nesting activities, the monitor shall notify the construction manager, and the construction manager, in consultation with the biological monitor, has the authority to implement measures to reduce the noise and/or disturbance in the vicinity.</p>
BIO-15	<p><i>Protect coastal California gnatcatcher and its habitat.</i></p> <p>15a. All Project activities taking place within suitable habitat for the coastal California gnatcatcher shall be conducted from September through February, which is a period outside their breeding season. If these activities cannot be avoided during the breeding season, the following measures shall apply:</p> <p>15b. LADWP shall conduct protocol surveys for coastal California gnatcatchers in areas supporting coastal sage scrub habitat that may be affected by the Project. In known occupied habitat for the California gnatcatcher, LADWP shall only conduct focused surveys for coastal California gnatcatchers. Survey areas shall include a 500-foot buffer around Project disturbance areas.</p> <p>15c. If a territory or nest is confirmed, the USFWS shall be notified immediately; on NFS or BLM lands, these agencies would also be notified immediately. In coordination with the USFWS and the appropriate land management agency, a 300-foot disturbance-free buffer shall be established and demarcated by fencing or flagging. This buffer may be adjusted, provided noise levels do not exceed 60 dB(A) hourly Leq at the edge of the nest site as determined by a qualified biologist in coordination with a qualified acoustician. If the noise meets or exceeds the 60 dB(A) Leq threshold, or if the biologist determines that the construction activities are disturbing nesting activities, the biologist shall notify the construction manager, and the construction manager, in consultation with the biologist, has the authority to halt the construction and shall devise methods to reduce the noise and/or disturbance in the vicinity. This may include methods such as, but not limited to, turning off vehicle engines and other equipment whenever possible to reduce noise, installing a protective noise barrier between the nest site and the construction activities, and working in other areas until the young have fledged. If noise levels still exceed 60 dB(A) Leq hourly at the edge of nesting territories and/or a no-construction buffer cannot be maintained, construction shall be deferred in that area until the nestlings have fledged. All active nests shall be monitored on a weekly basis until the nestlings fledge. No Project activities may occur in these areas unless otherwise authorized by USFWS. LADWP shall obtain incidental take authorization from the USFWS before further activities.</p> <p>15d. Protocol or focused surveys, as appropriate, shall be conducted, at a minimum, within one year of start of</p>

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	<p>construction. These surveys may be modified through the coordination with the USFS, BLM, and CDFG based on the condition of habitat, the observation of the species, or avoidance of nesting areas during the breeding season.</p> <p>15e. Construction activities in occupied gnatcatcher habitat will be monitored by a full-time qualified biologist. The monitoring shall be of a sufficient intensity to ensure that the biologist could detect the presence of a bird in the construction area. At a minimum, one full-time monitor shall be present for every two miles of active construction within occupied habitat. The monitors shall notify the construction manager, and the construction manager, in consultation with the biologist, will have the authority to halt all activities until appropriate corrective measures have been completed.</p>
BIO-16	<p><i>Protect burrowing owl.</i></p> <p>The following measures are proposed to minimize the potential for take of burrowing owl nests during construction associated with the proposed Project.</p> <p>16a Preconstruction surveys will be conducted throughout the Project site and laydown areas for burrowing owls, possible burrows, and sign of owls (e.g., pellets, feathers, white wash).</p> <p>16b Occupied burrows will not be disturbed during the breeding season (February 1 through August 31) unless an approved biologist verifies, through non-invasive methods, that both 1) the birds have not begun egg-laying and incubation, and 2) that juveniles from the occupied burrow are foraging independently and are capable of independent survival.</p> <p>16c Occupied burrows will be protected with a 600-foot buffer, if possible.</p> <p>16d When the destruction of an occupied burrow is unavoidable, the owl(s) will be passively relocated in accordance with the CDFG memo dated October 17, 1995. Relocation efforts will occur at least one week before ground disturbance of the area. A biologist will monitor the success of the relocation. A monitoring plan will be submitted to and approved by CDFG and BLM.</p> <p>16e Off-site mitigation will be pursued to enhance existing habitat in the region or fund research into the species to enhance survivorship of the species in the region.</p>
BIO-17	<p><i>Protect the bald eagle and golden eagle.</i></p> <p>17a If construction occurs during bald eagle and golden eagle breeding season, preconstruction surveys shall be conducted, in accordance with USFWS protocol requirements, for the Project area in regions with suitable habitat. Any active nests shall have an appropriate exclusion buffer established. This buffer shall be established based on existing conditions in consultation with the LADWP, USFS, BLM, CDFG and/or USFWS.</p> <p>17b Whenever bald eagles and golden eagles are observed within 100 yards of the construction area, construction shall be halted and shall not resume until the eagles leave.</p> <p>17c If a helicopter will be used for construction or maintenance, the aircraft must be no closer than 1,000 feet vertical or horizontal distance from communal roost sites.</p>
BIO-18	<p><i>Protect California condor.</i></p> <p>18a For all Project activities taking place immediately adjacent to or within known condor-occupied areas, a qualified biologist will monitor all construction activities and assist LADWP in the implementation of the monitoring program. The résumé of the proposed biologist(s) will be provided to the BLM and USFS for concurrence. This biologist(s) will be referred to as the authorized biologist hereafter. The authorized biologist will be present during all activities immediately adjacent to or within known condor-occupied areas. The authorized biologist shall notify the construction manager, and the construction manager, in consultation with the biologist, will have the authority to halt all activities until appropriate corrective measures have been completed. If condors are observed in helicopter construction areas, LADWP shall avoid further helicopter use until the animals have left the area. The authorized biologist will have radio contact with the Project foreman, who will be in radio contact with the helicopter pilot. The biologist will provide information to LADWP to avoid conflicts with condors. All condor sightings in the Project area will be reported to the USFWS and USFS (on NFS lands). LADWP will coordinate with USFWS on the construction schedule and helicopter work areas to determine if any condors have been tracked or observed in the vicinity of the Project area. If condors are observed in helicopter construction areas, LADWP shall avoid further helicopter use until the animals have left the area and the USFWS will be notified immediately. Should condors be found roosting within 0.5 mile of the construction area, no construction activity shall occur between one hour before sunset to one hour after sunrise, or until the</p>

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	<p>condors leave the area. Should condors be found nesting within 1.5 miles of the construction area, no construction activity will occur until further authorization from the USFWS and USFS (on NFS lands).</p> <p>18b Microtrash. All trash is required to be disposed of as written in the Proper Disposal of Construction Waste Plan for the Project. Additional language has been added to this Plan to address the disposal of microtrash. Workers will be trained on the issue of microtrash – what it is, its potential effects to California condors, and how to avoid the deposition of microtrash. In addition, all workers will properly dispose of their trash throughout the day and daily sweeps of the work area will occur to collect and remove trash in locations with the potential for California condors to occur.</p> <p>18c California Condor Worker Education Program. LADWP will develop a flyer that will be distributed to all workers on the Project concerning information on the California condor. Information to be included consists of the following: species description with photos and/or drawings indicating how to identify the California condor and how to distinguish condors from turkey vultures and golden eagles; protective status and penalties for violation of the Endangered Species Act; avoidance measures being implemented on the Project; and contact information for communicating condor sightings.</p> <p>18d Reporting. All California condor sightings in the Project area will be reported directly to the USFWS, USFS, and BLM (as appropriate). Before commencement of helicopter activity, LADWP will coordinate with a USFWS condor biologist to determine if any condors have been tracked or observed in the vicinity of the Project area.</p>
BIO-19	<p><i>Protect California spotted owl.</i></p> <p>Before construction activities within suitable habitat, LADWP shall have a qualified biologist conduct USFS protocol surveys for the California spotted owl to establish or confirm the location of nests within the Project. The résumés of the proposed biologists shall be provided to the USFS for concurrence. If nests or breeding pairs are found during the surveys, the limited operating period (LOP) will be applied according to the ANF Land Management Plan (Standard 20 – Part 3). No Project-related activities will be allowed within these dates (February 1 to August 15) or until chicks have fledged. Where a biological evaluation by a qualified ornithologist determines that a nest site would be shielded from planned activities by topographic or other features that would minimize disturbance, the buffer distance may be reduced upon approval of the USFS on NFS lands. In addition, no helicopter overflights shall be authorized without USFS approval. If approved, minimum altitudes will be 300 feet above a territory at an altitude designated by the USFS. This buffer may be adjusted through consultation with the USFS.</p>
BIO-20	<p><i>Protect American badger, Mohave ground squirrel, Tehachapi pocket mouse, and kit fox.</i></p> <p>20a. In areas identified as suitable habitat during the 2008 surveys, preconstruction surveys will occur for badgers, ground squirrels, pocket mice, and kit foxes. If present and feasible, construction would be avoided in or adjacent to occupied habitat during breeding season.</p> <p>20b. LADWP will consult with CDFG to see if a 2081 Permit for incidental take of Mohave Ground Squirrel is required.</p>
BIO-21	<p><i>Protect sensitive bat species.</i></p> <p>21a LADWP shall conduct a pre-construction survey (e.g., vegetation removal, grading) for roosting bats within 200 feet of Project activities within 15 days before any grading of rocky outcrops or removal of trees (particularly trees 12 inches in diameter or greater than 4.5 feet above-grade with loose bark or other cavities).</p> <ol style="list-style-type: none"> LADWP shall also conduct surveys for roosting bats during the maternity season (March 1 to July 31) within 300 feet of Project activities. Trees and rocky outcrops shall be surveyed by a qualified bat biologist (i.e., a biologist holding a CDFG collection permit and a Memorandum of Understanding with CDFG allowing the biologist to handle bats). Surveys duration shall be a minimum of one day and one evening. The résumé of the biologist shall be provided to the USFS and BLM (as appropriate) for concurrence before any Project activities. If active maternity roosts or hibernacula are found, the rock outcrop or tree occupied by the roost shall be avoided (i.e., not removed) by the Project, if feasible. If avoidance of the maternity roost is not feasible, the bat biologist shall survey (through the use of radio telemetry or other CDFG/USFS/BLM approved methods) for nearby alternative maternity colony sites. If the bat biologist determines, in consultation with and with the approval of the CDFG, USFS, and BLM (as appropriate), that there are alternative roost sites used by the maternity colony and young are not present, no further action is required, and it will not be necessary to provide alternative roosting habitat (i.e., Mitigation Measure

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	<p>BIO-21b would not apply, although Mitigation Measure BIO-21c would still apply). However, if there are no alternative roost sites used by the maternity colony, Mitigation Measure BIO-21b is required. If no active roosts are found, no further action is required. If active maternity roosts are absent, but a hibernaculum (i.e., a non-maternity roost) is present, Mitigation Measure BIO-21b is not necessary, but Mitigation Measure BIO-21c is required.</p> <p>21b Provision of substitute roosting bat habitat. If a maternity roost will be impacted by the Project, and no alternative maternity roosts are in use near the site, substitute roosting habitat for the maternity colony shall be provided on, or close to, the Project site no less than three months before the eviction of the colony. Alternative roost sites will be constructed in accordance with the specific bats' requirements in coordination with CDFG and ANF. By making the roosting habitat available before eviction (Mitigation Measure BIO-21c), the colony will have a better chance of finding and using the roost. Large concrete walls (e.g., on bridges) on south or southwestern slopes that are retrofitted with slots and cavities are an example of structures that may provide alternative roosting habitat appropriate for maternity colonies. Alternative roost sites must be of comparable size and proximal in location to the impacted colony. The CDFG shall also be notified of any hibernacula or active nurseries within the construction zone.</p> <p>21c Exclude bats before demolition of roosts. If non-breeding bat hibernacula are found in towers or trees scheduled to be removed or in crevices in rock outcrops within the grading footprint, the individuals shall be safely evicted, under the direction of a qualified bat biologist, by opening the roosting area to allow airflow through the cavity or other means determined appropriate by the bat biologist (e.g., installation of one-way doors). The résumé of the bat biologist shall be provided to the USFS and BLM (as appropriate) for concurrence before any Project activities. In situations requiring one-way doors, a minimum of one week shall pass after doors are installed, and temperatures should be sufficiently warm for bats to exit the roost, because bats do not typically leave their roost daily during winter months in southern coastal California. This action should allow all bats to leave during the course of one week. Roosts that need to be removed in situations where the use of one-way doors is not necessary in the judgment of the qualified bat biologist shall first be disturbed by various means at the direction of the bat biologist at dusk to allow bats to escape during the darker hours, and the roost tree shall be removed or the grading shall occur the next day (i.e., there shall be no less or more than one night between initial disturbance and the grading or tree removal).</p> <p>1) If an active maternity roost is in an area to be impacted by the Project, and alternative roosting habitat is available, the demolition of the roost site must commence before maternity colonies form (i.e., before March 1) or after young are flying (i.e., after July 31) using the exclusion techniques described above.</p> <p>21d Survey for bat nursery colonies. A CDFG-approved biologist shall conduct a habitat assessment for bat nursery colonies before any construction activity. The approved biologist shall then conduct a survey for bat nursery colonies or signs of such colonies before construction. Direct impacts to a nursery colony site shall not be allowed, and approach of, or entrance to, an active nursery colony site shall be prohibited. Before any blasting or drilling in the vicinity of a nursery colony site, the CDFG-approved biologist shall work with the construction crew to devise and implement methods to minimize potential indirect impacts to the nursery colony site from falling rock or substantial vibration (while a nursery colony is active). The methods shall include an option to halt any construction activity that would cause falling rock, substantial vibration impacts, or any other construction-related impact to a nursery colony as determined by the approved biologist, until the colony is inactive. Should falling rock block the entrance to a nursery colony site, the contractor shall work with the approved biologist to reopen an entrance to the site.</p> <p>21e If habitat must be removed for construction to continue, a two-step removal process will be implemented. The two-step removal process will involve permitted biologists to alter the habitat outside of the season of use (i.e., outside of hibernating/maternity season) to make the habitat less suitable, and the following day the habitat will be removed under the supervision of the permitted biologist.</p>
BIO-22	<p><i>Protect special-status reptile species.</i></p> <p>A qualified biologist with demonstrated expertise with special-status herpetofauna shall monitor all construction activities and assist LADWP in the implementation of the monitoring efforts. The résumé of the proposed biologist will be provided to the USFS or BLM (as appropriate) for concurrence before the onset of ground-disturbing activities. The authorized biologist will be present during ground-disturbing activities immediately adjacent to or within habitat that supports populations of the special-status herpetofauna. Any special-status herpetofauna found within a Project impact area shall be salvaged by the authorized biologist and relocated to suitable habitat outside the impact area. If the installation of exclusion fencing is deemed necessary by the authorized biologist, the</p>

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	authorized biologist will direct the installation of the fence. Clearance surveys for special-status herpetofauna shall be conducted by the authorized biologist before the initiation of construction each day.
BIO-23	<p><i>Protect desert tortoise and habitat loss.</i></p> <p>23a Preconstruction clearance surveys will be conducted for desert tortoise in the area designated as a "Survey Area" in the West Mojave Plan, "Alternative A" and areas within suitable habitat. If tortoise sign is found, construction activities should either be monitored by a tortoise biologist with a valid permit, or a tortoise-proof fence should be erected to preclude tortoise from the area of impact. If no tortoise sign is found, monitoring by a tortoise biologist would not be required. Instead, a biologist could be on call should a tortoise wander into non-monitored sites.</p> <p>23b To facilitate the free movement of desert tortoises, roadbeds should not be lowered, and berms placed along dirt roads should not exceed 12 inches or a slope of 30 degrees within the area designated as a "Survey Area" in the West Mojave Plan, "Alternative A" and areas that sign or habitat was found during the preconstruction surveys.</p> <p>23c Burrows within 100 feet of the construction zone shall be flagged by a person authorized by the USFWS to handle desert tortoises so that the qualified biologist would be able to more easily locate them during construction. The qualified biologist shall be on-site to monitor all construction that occurs in the vicinity of flagged burrows and to watch for desert tortoise.</p> <p>23d All desert tortoise burrows or pallets in the construction area shall be excavated by the USFWS-authorized biologist.</p> <p>23e A translocation plan will be approved by the wildlife agencies before removal or handling of tortoise.</p> <p>23f Desert tortoises that are found above ground during construction and need to be moved from potential harm shall be placed in the shade of a shrub by the USFWS-authorized biologist. Any desert tortoise removed from burrows shall be placed in an unoccupied burrow of approximately the same size as the one from which it was removed. Tortoises shall not be placed more than 1,000 feet from where they were found. If an existing burrow is unavailable, the authorized biologist shall construct or direct the construction of a burrow of similar size, shape, depth, and orientation as the original burrow. Desert tortoises moved during inactive periods would be monitored for at least two days after placement in the new burrows to ensure their safety. The authorized biologist shall be allowed some judgment and discretion to ensure that the survival of the desert tortoise is likely.</p> <p>23g If a tortoise is in a construction or maintenance area and is not moving, adjacent activities would be halted until the authorized biologist is able to move it out of harm's way.</p> <p>23h Any time a vehicle is parked, the ground around and under the vehicle shall be inspected for desert tortoises before the vehicle is moved. If a desert tortoise is observed, it shall be left to move on its own. If this does not occur within 15 minutes, the authorized biologist shall remove and relocate the tortoise.</p> <p>23i All construction and maintenance activities in desert tortoise habitat shall be conducted between dawn and dusk.</p> <p>23j Within potential desert tortoise habitat areas, vehicles shall not exceed 25 miles per hour on access roads during the period of highest desert tortoise activity (March 1 through October 31).</p> <p>23k Tower foundations or other excavations that pose a potential to entrap or injure tortoise shall be inspected on a regular basis until the foundation or other structure is in place. Excavations also will include an escape ramp where appropriate.</p> <p>23l A desert tortoise education program will be presented to all personnel who will be onsite at any time, including but not limited to contractors, contractors' employees, supervisors, inspectors, and subcontractors. This program will be presented in English and Spanish, if appropriate, and contain information concerning the biology and distribution of the desert tortoise and other sensitive species, its legal status and occurrence in the proposed Project area, the definition of "take" and associated penalties, the terms and conditions of this biological opinion, measures designed to minimize the effects of construction activities, the means by which employees can facilitate this process, and reporting requirements to be implemented when tortoises are encountered or in cases of non-compliance with the Biological Opinion. The name of each individual trained will be recorded on a sign-in sheet.</p> <p>23m A litter-control program will be implemented to reduce the attractiveness of the area to opportunistic predators such as desert kit fox, coyotes, and common ravens. Trash and food items will be disposed of properly in predator-proof containers with re-sealing lids. Trash containers will be emptied, and construction waste will be removed daily from the Project area and disposed of in an approved landfill.</p> <p>23n LADWP shall report any observations of raven predation on desert tortoises in the Project area to CDFG</p>

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	<p>and USFWS.</p> <p>23o Temporary tortoise-proof fencing will be installed on all areas of known tortoise habitat boundaries to ensure impacts are minimized to the maximum extent possible. An initial tortoise clearance of the fence line will be conducted before fence construction.</p> <ol style="list-style-type: none"> 1) Temporary fencing should consist of 1-inch mesh or 1-inch horizontal by 2-inch vertical mesh (hardware, cloth or plastic) and be installed flush with the ground and extend at least 18 inches above-ground. Temporary tortoise-proof fencing should not be buried. In areas of high rodent activity where plastic mesh is used, temporary fencing may need more frequent monitoring to ensure no breaches exist.
BIO-24	<p><i>Protect arroyo toad and California red-legged frog.</i></p> <p>24a LADWP shall conduct USFWS-approved protocol surveys for arroyo toads and California red-legged frogs at all locations containing suitable habitat near the proposed construction sites within two years before the start of construction.</p> <p>24b If arroyo toads are detected, further surveys within the area will not be required and the avoidance measures detailed below will be followed. If no arroyo toads are detected, habitat assessments will be performed on a yearly basis to determine if the area continues to provide suitable habitat; if an area continues to provide suitable habitat, surveys will be repeated every two years until construction is completed. For all areas in which this species has been documented, LADWP shall develop and implement a monitoring plan that includes the following measures in consultation with the USFWS and USFS.</p> <ol style="list-style-type: none"> 1) LADWP shall retain a qualified biologist with demonstrated expertise with arroyo toads to monitor all construction activities in occupied arroyo toad habitat and assist LADWP in the implementation of the monitoring program. The résumés of the proposed biologists will be provided to the USFS for concurrence. This biologist will be referred to as the authorized biologist hereafter. The authorized biologist will be present during all activities immediately adjacent to or within habitat that supports populations of arroyo toad. 2) All trash that may attract predators of the arroyo toad will be removed from work sites or completely secured at the end of each work day. Before the onset of any construction activities, LADWP shall meet on-site with staff from the USFS and the authorized biologist. LADWP shall provide information on the general location of construction activities within habitat of the arroyo toad and the actions taken to reduce impacts to this species. Because arroyo toads may occur in various locations during different seasons of the year, LADWP, USFS, USFWS, and authorized biologists will, at this preliminary meeting, determine the seasons when specific construction activities would have the least adverse effect on arroyo toads. 3) Any arroyo toads found during clearance surveys shall be reported to the USFWS and the USFS immediately. Clearance surveys shall occur on a daily basis in areas that contain suitable habitat. 4) If the authorized biologist determines that Project activities are disturbing the species, they shall notify the construction manager, and the construction manager, in consultation with the biologist, will have the authority to halt all activities until appropriate corrective measures have been completed. 5) To ensure that diseases are not conveyed between work sites by the authorized biologist or his or her assistants, the fieldwork code of practice developed by the Declining Amphibian Populations Task Force will be followed at all times. 6) LADWP will avoid ground disturbing activities (e.g., grading, stream crossing upgrades, parking) along access roads within a 1.0 mi (1.6 km) buffer of occupied stream habitat for arroyo toads during the activity period for arroyo toads (March through November). This date and buffer may be modified based on the existing temperature regime and habitat conditions, with Angeles National Forest approval. 7) LADWP will limit use of the access roads in areas known to support arroyo toad within a 1.0-mile (1.6 km) buffer to daylight hours only during the activity period for arroyo toads (generally March through November). Use of these roadways during rain events will not occur during the activity period for arroyo toads. Vehicle speeds will be limited to 15 mph (24 kph), and no parking or loitering will occur along the access roads. A qualified biologist must permanently remove from within the Project area any individuals of exotic species, such as bullfrogs, crayfish, and centrarchid fishes, to the maximum extent possible and ensure that activities are in compliance with the California Fish and Game Code. 8) No stockpiles of materials will occur in areas occupied by arroyo toads. 9) Any spills of fluids that may be hazardous to aquatic fauna (gasoline, hydraulic fluid, motor oil, etc.) in

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	<p>areas that may contain arroyo toads will be reported to the USFS and USFWS within one hour.</p> <p>10) For each ac/ha of arroyo toad occupied habitat that is permanently impacted on the Angeles National Forest, five ac/ha of arroyo toad occupied habitat will be conserved in the vicinity of the impacted habitat (i.e., impacts will be offset at a habitat ratio as required by the final Biological Opinion).</p> <p>24c If California red-legged frogs are detected, further surveys within the area will not be required and the avoidance measures detailed below will be followed. If no California red-legged frogs are detected, habitat assessments will be performed on a yearly basis to determine if the area continues to provide suitable habitat; if an area continues to provide suitable habitat, surveys will be repeated every two years until construction is completed. For all areas in which this species has been documented, LADWP shall develop and implement a monitoring plan that includes the following measures in consultation with the USFWS and USFS.</p> <ol style="list-style-type: none"> 1) All trash that may attract predators of red-legged frogs will be removed from work sites or completely secured at the end of each work day. 2) Between November 1 and March 31, no work will be authorized within one mile of occupied habitat, and no vehicular crossings at wet fords of those channels will be authorized. The one-mile buffer distance may be reduced based on the topography of the site, with the approval of the USFWS and the USFS. 3) If and as required by USFWS, between April 1 and October 31, no work will be authorized within 0.5 mile of occupied habitat, and no vehicular crossings at wet fords of those channels will be authorized. 4) If and as required by USFWS, from November 1 thru March 31, overflights will be restricted to a minimum altitude of 1,000 feet (305 m) from the stream bottom within 1.0 mile (1.6 km) of a California red-legged frog occupied stream. 5) Before the onset of any construction activities, LADWP shall meet on-site with staff from the USFWS and the authorized biologist. The authorized biologist shall hold a current red-legged frog permit from USFWS. LADWP shall provide information on the general location of construction activities within habitat of the red-legged frog and the actions taken to reduce impacts to this species. Because red-legged frogs may occur in various locations during different seasons of the year, LADWP, USFWS, USFS, and authorized biologists will, at this preliminary meeting, determine the seasons when specific construction activities would have the least adverse effect on red-legged frogs. 6) Where construction would occur in habitat where red-legged frogs are widely distributed, work areas will be fenced in a manner that prevents equipment and vehicles from straying from the designated work area into adjacent habitat. The authorized biologist will assist in determining the boundaries of the area to be fenced in consultation with the LADWP and the responsible agency(s). All workers will be advised that equipment and vehicles must remain within the fenced work areas. 7) The authorized biologist will direct the installation of the fence and conduct a minimum of three nocturnal surveys to move any red-legged frogs from within the fenced area to suitable habitat outside of the fence. If red-legged frogs are observed on the final survey or during subsequent checks, the authorized biologist will conduct additional nocturnal surveys if he or she determines that they are necessary in concurrence with the USFWS/CDFG/USFS. 8) Fencing to exclude red-legged frogs will be at least 24 inches in height. 9) Construction activities that may occur near breeding pools or other areas where large numbers of red-legged frogs may congregate will be conducted during times of the year when individuals have dispersed from these areas (i.e., winter) or the species is dormant, unless otherwise authorized by the USFS and USFWS. The authorized biologist will assist LADWP in scheduling its work activities accordingly. 10) If red-legged frogs are found within an area that has been fenced to exclude red-legged frogs, activities will cease until the authorized biologist moves the red-legged frogs. 11) If red-legged frogs are found in a construction area where fencing was deemed unnecessary, work will cease until the authorized biologist moves the red-legged frogs. The authorized biologist in consultation with USFWS/CDFG/USFS will then determine whether additional surveys or fencing are needed. 12) Any red-legged frogs found during clearance surveys shall be reported to the USFWS and the USFS immediately. Clearance surveys shall occur on a daily basis in the work area. 13) If the authorized biologist determines that Project activities are disturbing the species, they shall notify the construction manager, and the construction manager, in consultation with the biologist, will have

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	the authority to halt all activities until appropriate corrective measures have been completed.
	14) LADWP shall restrict work to daylight hours, except during an emergency, to avoid nighttime activities when red-legged frogs may be present on the access road. Traffic speed should be maintained at 15 mph or less in the work area.
	15) A qualified biologist must permanently remove from within the Project area any individuals of exotic species, such as bullfrogs, crayfish, and centrarchid fishes, to the maximum extent possible, and ensure that activities are in compliance with the California Fish and Game Code.
	16) No stockpiles of materials will occur in areas occupied by California red-legged frogs.
	17) To ensure that diseases are not conveyed between work sites by the authorized biologist or his or her assistants, the fieldwork code of practice developed by the Declining Amphibian Populations Task Force will be followed at all times.
	18) Any spills of fluids that may be hazardous to aquatic fauna (gasoline, hydraulic fluid, motor oil, etc.) in areas that may contain California red-legged frogs will be reported to the USFS and the USFWS within one hour.

2.4 EXISTING ENVIRONMENT

The physiography of the Project area in the Los Angeles and Kern County regions from north to south is the flat Antelope Valley gradually rising in elevation (Northern region) and giving way to the foothills of the ANF (Central region). Continuing south, the foothills gradually give way to the City of Santa Clarita (Southern region). Drainages originating from the foothills of the ANF have carried rock detritus and water to the Santa Clarita area. This has produced several riparian areas, which support a rich, varied, and unique ecosystem. The diversity and distribution of biological resources within the study corridor are a function of the regional climate, soils, and topography. For most of the region, the availability of water or soil moisture is the critical factor that determines the broad distribution of vegetation types and associated wildlife species. To provide baseline conditions for the dominant soil type, water and habitat characteristics the biological study was divided to three ecotype regions (Northern, Central and Southern). The Northern and Southern regions of the Project do not occur within the ANF at all and are not discussed further. The Central region of the BRRTTP encompasses the southern ends of Alternatives 1, 2, 2a, and 3, as well as Segment J (new 230 kV circuit between Haskell Canyon and the Castaic Power Plant), and is discussed below in greater detail.

2.5 CENTRAL REGION – ANF BOUNDARIES

Alternatives 1, 2, 2a, 3, the new 230 kV circuit (Segment J), and reconductoring component within the ANF are located in steep, mountainous terrain of the eastern Transverse Ranges, including the northern San Gabriel and Liebre Mountains. The ecotype is considered the Northern Transverse Range and is characterized by broad fault blocks and alleviated lowlands, and is dissected by granitic uplands (Table 3). The eco-region is characterized by its high elevation setting and the influence from upper level weather patterns in the west, decreasing to mid-elevation ranges along the eastern section. Along the southern end of the eco-region, the high-elevation mountain range transcends into the foothills of the Santa Clarita Valley. Long periods of hot, dry weather are not uncommon at the high elevations of the Northern Transverse Ranges. Precipitation ranges from 6 to 40 inches annually throughout the eco-region.

TABLE 3. SOIL TYPES PRESENT IN CENTRAL REGION

Segment	Soil Series	Drainage Class	Series Soil pH
Alternative 1	Cortina	Excessively drained	Slightly acid
Alternative 1	Hanford	Well drained	Slightly alkaline
Alternative 1	Metz	Somewhat excessively drained	Moderately alkaline

Segment	Soil Series	Drainage Class	Series Soil pH
Alternative 1	Millsholm	Well drained	Neutral to slightly acid
Alternative 1	Mollic Haploxeralfs	Well drained	Extremely acid
Alternative 1	Osito family	Well drained	Neutral to slightly acid
Alternative 1	Rock outcrop	N/A	Neutral
Alternative 1	Saugus	Well drained	Slightly acid
Alternative 1	Trigo family	Somewhat excessively drained	Slightly acid
Alternative 2/ Reconductor	Amargosa	Excessively drained	Neutral
Alternative 2/ Reconductor	Chino	Excessively drained	Moderately alkaline
Alternative 2/ Reconductor	Exchequer family	Somewhat excessively drained	Slightly acid
Alternative 2/ Reconductor	Greenfield	Well drained	Neutral
Alternative 2/ Reconductor	Hanford	Well drained	Slightly acid
Alternative 2/ Reconductor	Lodo family	Somewhat excessively drained	Slightly acid
Alternative 2/ Reconductor	Millsholm	Well drained	Slightly acid
Alternative 2/ Reconductor	Mollic Haploxeralfs	Well drained	Extremely acid
Alternative 2/ Reconductor	Ramona	Well drained	Moderately acid
Alternative 2/ Reconductor	Rock outcrop	N/A	Neutral
Alternative 2/ Reconductor	San Andreas family	Well drained	Moderately acid
Alternative 2/ Reconductor	Trigo family	Somewhat excessively drained	Slightly acid
Alternative 2/ Reconductor	Tujunga family	Excessively drained	Slightly acid
Alternative 2/ Reconductor	Vista	Well drained	Neutral
Alternative 2/ Reconductor	Yolo	Well drained	Neutral
Alternative 2a	Amargosa	Excessively drained	Neutral
Alternative 2a	Exchequer family	Somewhat excessively drained	Slightly acid
Alternative 2a	San Andreas family	Well drained	Moderately acid
Alternative 2a	Trigo family	Somewhat excessively drained	Slightly acid
Alternative 3	Amargosa	Excessively drained	Neutral
Alternative 3	Anaverde	Well drained	Neutral
Alternative 3	Castaic	Well drained	Slightly acid
Alternative 3	Cortina	Excessively drained	Slightly acid
Alternative 3	Exchequer family	Somewhat excessively drained	Slightly acid
Alternative 3	Godde	Well drained	Slightly acid
Alternative 3	Greenfield	Well drained	Neutral
Alternative 3	Hanford	Well drained	Slightly acid
Alternative 3	Lodo family	Somewhat excessively drained	Slightly acid
Alternative 3	Metz	Somewhat excessively drained	Moderately alkaline
Alternative 3	Mocho	Well drained	Moderately alkaline
Alternative 3	Saugus	Well drained	Neutral to slightly acid
Alternative 3	Vista	Well drained	Neutral
Alternative 3	Wyman	Well drained	Neutral
Alternative 3	Yolo	Well drained	Neutral
New 230 kV Circuit	Castaic	Well drained	Slightly acid
New 230 kV Circuit	Hanford	Well drained	Slightly acid
New 230 kV Circuit	Metz	Somewhat excessively drained	Moderately alkaline
New 230 kV Circuit	Millsholm	Well drained	Slightly acid
New 230 kV Circuit	Mollic Haploxeralfs	Well drained	Extremely acid
New 230 kV Circuit	Rock outcrop	N/A	Neutral
New 230 kV Circuit	Saugus	Well drained	Neutral to slightly acid
New 230 kV Circuit	Zamora	Well drained	Neutral

Within the central eco-region boundary, the vegetation composition is predominantly shrubs, approximately 137,000 acres. The eco-region is dominated by mixed chaparral series with a sparse mixture of deciduous and pine forests, decreasing in density as the elevation drops into the Santa Clarita Valley and Los Angeles Basin. Predominant plant species include *Quercus* spp. (Oak species), *Ceanothus*

spp. (Sugar Brush), *Arctostaphylos glauca* (Big Berry Manzanita), *Adenostoma fasciculatum* (Chamise) and *Eriogonum fasciculatum* (California buckwheat). There are three major drainages and several small drainages that originate from the foothills of the Angeles National Forest and spread over the northwestern Los Angeles County region. The San Francisquito Canyon Creek, a minor drainage in the area, has several small distributaries. A second drainage, originating from Bouquet Reservoir, is Bouquet Canyon Creek. The third drainage, Santa Clara River, has several small distributaries, including Mint Canyon Creek, Rowher Canyon Creek, and Aqua Dulce Canyon Creek. The Santa Clara River also has two minor distributaries, San Francisquito Canyon Creek and Bouquet Canyon Creek. Many reaches of these natural and modified stream channels have the ability to support riparian areas and function as wildlife corridors.

Wildfires are an integral part in the biodiversity of plant and animals ecosystems in Southern California (Zedler 1995). Within the last fifty years, there have been nine fires that have burned over 10,000 acres within the Project area. One of the more recent large wildfires was the 2007 Buckweed Fire, which burned approximately 40,000 acres east of Santa Clarita and to the north of State Route 14 and burned through a significant portion of Alternatives 2 and 2a. The vegetation in this burned portion of Alternative 2 is varying in its regrowth response from a range of poor to moderate. The lack of highly successful regrowth can be attributed to the prevalence of invasive, non-native plants, which are outcompeting the native species.

2.5.1 Vegetation Communities

The Project area within the ANF was surveyed during the spring and summer months in 2008, 2009, and 2010. Botanical surveys were conducted and current vegetation communities were mapped and the data used to refine existing Project vegetation maps that were based off of Gap Analysis Program (GAP) data. Vegetation communities that are present within the forested Project area and their respective acreages and disturbance estimates include the following:

TABLE 4. ESTIMATED TEMPORARY DISTURBANCE OF VEGETATION COMMUNITIES WITHIN THE BRRTF

Vegetation Community	Jurisdiction	Total Acreage	Temporary Minimum Disturbance (Ac)	Temporary Maximum Disturbance (Ac)	Permanent Minimum Disturbance (Ac)	Permanent Maximum Disturbance (Ac)	Percentage of Total Habitat Permanently Impacted in each jurisdiction
Alternative 1							
Chamise Chaparral	Forest Service	488.38	50.87	56.06	9.98	16.73	3.43%
Riversidian Sage Scrub	Forest Service	100.74	9.74	10.48	1.84	3.06	3.04%
Southern Coast Live Oak Riparian Forest	Forest Service	3.59	0.38	0.38	0.05	0.05	1.35%
Southern Cottonwood Willow Riparian Forest	Forest Service	8.04	0.86	0.86	0.23	0.42	5.28%
Southern Mixed Chaparral	Forest Service	349.92	40.80	45.81	8.36	14.13	4.04%
Southern Sycamore Alder Riparian Woodland	Forest Service	2.38	0.25	0.25	0.07	0.13	5.28%
Southern Willow Scrub	Forest Service	12.91	1.11	1.30	0.19	0.32	2.48%
Alternative 2 – LADWP's Proposed Action and Federal Agency Preferred Alternative							
Chamise Chaparral	Forest Service	344.45	38.61	39.38	6.9	10.11	2.9%
Barren/developed	Forest Service	231.75	24.86	24.86	4.84	7.80	3.4%
Riversidian Sage Scrub	Forest Service	82.47	8.85	8.85	1.37	1.84	2.2%
Southern Coast Live Oak Riparian Forest	Forest Service	20.33	3.01	3.40	0.56	0.69	3.4%
Southern Mixed Chaparral	Forest Service	81.79	8.77	8.77	1.89	3.24	4.0%
Southern Riparian Scrub	Forest Service	6.19	0.66	0.66	0.17	0.33	5.3%

Vegetation Community	Jurisdiction	Total Acreage	Temporary Minimum Disturbance (Ac)	Temporary Maximum Disturbance (Ac)	Permanent Minimum Disturbance (Ac)	Permanent Maximum Disturbance (Ac)	Percentage of Total Habitat Permanently Impacted in each jurisdiction
Southern Sycamore Alder Riparian Woodland	Forest Service	20.32	2.18	2.18	0.50	0.50	2.5%
Scrub oak							
Alternative 2a							
Canyon Live Oak Forest*		-	-	-	-	-	-
Chamise Chaparral	Forest Service	344.44	38.61	39.38	6.90	10.11	2.94%
Disturbed/developed	Forest Service	119.26	12.45	12.72	2.15	3.24	2.72%
Interior Live Oak Chaparral	Forest Service	53.92	5.18	5.60	1.14	2.06	3.83%
Riversidian Sage Scrub	Forest Service	82.47	8.85	8.85	1.37	1.84	2.23%
Scrub Oak Chaparral	Forest Service	30.05	3.12	3.19	0.78	1.46	4.85%
Southern Coast Live Oak Riparian Forest	Forest Service	20.33	3.01	3.40	0.56	0.69	3.39%
Southern Mixed Chaparral	Forest Service	268.16	25.39	27.88	5.17	9.03	3.37%
Southern Riparian Scrub	Forest Service	6.19	0.66	0.66	0.17	0.33	5.28%
Southern Sycamore Alder Riparian Woodland	Forest Service	15.32	1.64	1.64	0.43	0.81	5.27%
Alternative 3							
Barren/developed	Forest Service	19.45	2.12	2.13	0.56	1.04	5.35%
Riversidian Sage Scrub	Forest Service	140.94	24.72	28.19	5.81	9.57	6.79%
Scrub Oak Chaparral	Forest Service	54.36	5.83	5.83	1.52	2.87	5.28%
Southern Riparian Scrub	Forest Service	6.47	0.69	0.69	0.18	0.34	5.28%
Reconductoring							
Chamise Chaparral	Forest Service	304.26	32.65	32.65	8.54	16.07	5.3%
Disturbed/developed	Forest Service	235.69	25.28	25.28	4.86	7.77	3.3%
Riversidian Sage Scrub	Forest Service	85.68	10.30	10.30	2.69	5.07	5.9%
Southern Coast Live Oak Riparian Forest	Forest Service	61.53	6.60	6.60	1.73	3.25	5.3%
Southern Mixed Chaparral	Forest Service	74.74	8.01	8.01	1.69	2.87	3.8%
Southern Riparian Scrub	Forest Service	6.17	0.66	0.66	0.17	0.33	5.3%
Southern Sycamore Alder Riparian Woodland	Forest Service	19.61	2.34	2.34	0.54	0.95	4.8%
New 230 kV Circuit							
Chamise Chaparral	Forest Service	139.37	21.06	23.05	4.73	8.03	5.8%
Riversidian Sage Scrub	Forest Service	55.49	5.96	5.96	1.20	1.98	3.6%
Southern Coast Live Oak Riparian Forest	Forest Service	6.11	0.66	0.66	0.08	0.08	1.3%
Southern Cottonwood Willow Riparian Forest	Forest Service	7.49	0.80	0.80	0.21	0.40	5.3%
Southern Sycamore Alder Riparian Woodland	Forest Service	1.78	0.19	0.19	0.05	0.09	5.1%

*Note: Although Canyon Live Oak Forest was identified as a vegetation community present on Alternative 2a during 2010 BRTP botanical surveys, it is not one of the communities listed in the GAP data for this area (POWER 2010b). Because vegetation community mapping was not conducted during the botanical surveys, the exact area and corresponding impact acreages for Canyon Live Oak Forest were not calculated. Acreage numbers for other habitat types listed on Alternative 2a thus may be smaller than those listed in the table above, which is based only on GAP data. This will not change the total acreage of Alternative 2a.

Coast Live Oak Woodland

As described by Holland (1986), coast live oak woodland is composed of semi-open stands dominated by evergreen trees of coast live oak (*Quercus agrifolia*). This type is widely distributed in coastal valleys and low hills of California. In southern California it is often restricted to north-facing slopes and shaded

ravines (Holland 1986). The equivalent series in Sawyer and Keeler-Wolf (1995) is the coast live oak series.

Where this community is located within the Project area on ANF lands, coast live oak is the dominant tree, with an understory that includes holly-leaved redberry, chaparral nightshade, common bedstraw (*Galium aparine*), and California blackberry (*Rubus ursinus*). Associated species include durango root (*Datisca glomerata*), common hareleaf (*Lagophylla ramosissima* ssp. *ramosissima*), giant wild-rye (*Leymus condensatus*), common horehound (*Marrubium vulgare*), California burclover (*Medicago polymorpha*), branching phacelia (*Phacelia ramosissima* var. *latifolia*), and blue elderberry.

Coast live oak woodland is present on Segment G around Drinkwater Flat and Bee Canyon, and on the Green Valley Localized Re-Route (Segment 2a).

Riparian Willow Scrub

Riparian willow scrub is similar to Holland's southern willow scrub (Holland 1986), but differs from it because it is not a coastal type and does not occur along major rivers. The type referred to here as riparian willow scrub is a shrub-willow-dominated vegetation type; this vegetation is denser, and is found at higher elevations than alluvial wash scrub.

The predominant species are narrow-leaved willow (*Salix exigua*), red willow (*Salix laevigata*), and arroyo willow (*Salix lasiolepis*). There are a few scattered trees of western sycamore (*Platanus racemosa*) and coast live oak. Other shrub species include mulefat (*Baccharis salicifolia*), basketbush, California wild rose (*Rosa californica*), and poison oak. The herbaceous layer in this community includes emergent wetland species, such as Dudley's sedge (*Carex dudleyi*), Parish's spike-rush (*Eleocharis parishii*), toad-rush (*Juncus bufonius*), western rush (*Juncus occidentalis*), broadleaf cattail (*Typha latifolia*) white watercress (*Rorippa nasturtium-aquaticum*) and water speedwell (*Veronica anagallis-aquatica*). Native perennial upland species include narrow-leaved California fuchsia (*Epilobium canum* ssp. *canum*), beardless wild-rye (*Elymus triticoides*) and giant wild-rye. This type may correspond to the mixed willow series of Sawyer and Keeler-Wolf (1995).

Riparian willow scrub was found along intermittent drainages within a section of Segment G.

Southern Sycamore-Alder Riparian Woodland

The Holland type southern sycamore-alder riparian woodland is a tall, open, broad-leaved, winter-deciduous streamside woodland (Holland 1986). Western sycamore, bigleaf maple (*Acer macrophyllum*), and white alder (*Alnus rhombifolia*) form the semi-open tree canopy. It is characteristic of drainages with seasonal high intensity flows in the Transverse and Peninsular ranges.

Within ANF land in the Project area, this type was found on a variety of substrates, including sandy alluvium. Variation in tree and shrub density and diversity occurs from site to site. In addition to western sycamore, big leaf maple, and white alder as dominant trees, this type includes as tree associates coast live oak and canyon live oak (*Quercus chrysolepis*). Dominant shrubs include Tucker's oak (*Quercus john-tuckeri*), arroyo willow, California sagebrush, mulefat, bush mallow (*Malacothamnus fremontii*), and California buckwheat. The diverse understory of herbaceous plants includes clarkia, seep monkey-flower (*Mimulus guttatus*), annual Indian paintbrush (*Castilleja minor*), chaparral honeysuckle (*Lonicera interrupta*), Hooker's evening primrose (*Oenothera elata*), tomcat clover (*Trifolium willdenovii*), California four o'clock (*Mirabilis californica*), sturdy sedge (*Carex alma*), toad-rush and sticky chickweed (*Cerastium glomeratum*). Invasive non-native plants common in this type include tamarisk (*Tamarix ramosissima*), tree tobacco (*Nicotiana glauca*) and rabbitsfoot grass (*Polypogon monspeliensis*).

Southern sycamore-alder riparian woodland was observed within Segment 2a.

Chamise Chaparral

Chamise chaparral is a Holland type of chaparral usually dominated by a nearly continuous canopy of chamise (Holland 1986). Many other shrub species can grow with chamise in this type, but they make up a small fraction of the total shrub cover. This fire-adapted vegetation type is found on steep, dry, rocky slopes, with shallow soils. It burns frequently, and after fire chamise shrubs and other shrubs in this type rapidly sprout back from the base. Mature chamise chaparral has few plants in the understory; however, after fire a dense understory layer of forbs and grasses may be present. Chamise chaparral is widespread in California; it is more abundant in southern California (Holland 1986). The corresponding series in Sawyer and Keeler-Wolf (1995) is the chamise series.

Chamise chaparral was observed throughout the Project area within the ANF. Much of the surveyed area was burned in large wildfires in 2007 and during the last five years, so chamise and other shrubs were in an early stage of regrowth, and understory forbs and grasses were abundant and diverse at the time of the protocol-level surveys. Associated shrub species include toyon (*Heteromeles arbutifolia*), holly-leaved cherry (*Prunus ilicifolia* ssp. *ilicifolia*), yerba santa, California buckwheat, deerweed, scrub oak (*Quercus berberidifolia*), holly-leaved redberry, white sage, black sage, poison oak (*Toxicodendron diversilobum*), and chaparral yucca. This shrub diversity indicates that, within the Project area, chamise chaparral intergrades with Riversidian sage scrub.

The forb and grass layer is typically very sparse, but after recent fires this layer was well-developed within burned areas. The special-status plant slender mariposa lily (*Calochortus clavatus* var. *gracilis*) was common in recently burned chamise chaparral at the time of the 2008 protocol-level surveys. Other common forbs and grasses included blazing star (*Mentzelia albicaulis*), wild oat, Pacific fescue (*Vulpia microstachys*), six-weeks fescue (*Vulpia octoflora*), shortpod mustard, ripgut brome, red brome, sun cups (*Camissonia* sp.), popcorn flower, red-stemmed filaree (*Erodium cicutarium*), valley lessingia (*Lessingia glandulifera*), spear-leaved agoseris, lupines (*Lupinus* spp.), phacelia (*Phacelia* spp.), and fescue (*Vulpia* spp.).

Chamise chaparral was mapped along the southern third of Alternative 2. It was also found along most of the southern half of Segment J.

Disturbed/Developed

Disturbed/developed areas are generally subject to intensive use with much of the land covered by structures. Disturbed areas are typically characterized by heavily compacted or frequently disturbed soils, and are often devoid of vegetation or possess only a sparse cover, including ruderal communities which are well adapted to survive in such conditions.

Disturbed/developed areas were mapped around Green Valley in Alternatives 2 and 2a.

Riversidian Sage Scrub

Riversidian sage scrub is the most xeric form of coastal sage scrub (Holland 1986). This Holland type consists of open stands of shrubs on dry sites such as steep slopes, severely drained soils, or dense clay soils. It intergrades with several types of southern California chaparral. The understory includes grasses and forbs. As described by Holland (1986), the dominant shrubs include California sagebrush (*Artemisia californica*) and California buckwheat (*Eriogonum fasciculatum*). This type is distributed along the western base of the Transverse and Peninsular Ranges from Los Angeles County to the Mexican border (Holland 1986).

Riversidian sage scrub consists of fairly open stands of low shrubs and subshrubs. Dominant species include California sagebrush, California buckwheat, brittlebush (*Encelia californica*), yerba santa (*Eriodictyon*

crassifolium), sawtoothed goldenbush (*Hazardia squarrosa*), deerweed (*Lotus scoparius*), bush monkeyflower (*Mimulus aurantiacus*), white sage (*Salvia apiana*), and black sage (*Salvia mellifera*). Chamise (*Adenostoma fasciculatum*), holly-leaved redberry (*Rhamnus ilicifolia*), blue elderberry (*Sambucus mexicana*), and chaparral yucca (*Yucca whipplei*) also were present as associates. The forb and grass layer of Riversidian sage scrub is dominated by native and introduced annuals and perennials including common fiddleneck, wild oat (*Avena fatua*), shortpod mustard (*Hirschfeldia incana*), ripgut brome, red brome, miner's lettuce, popcorn flower (*Plagiobothrys* sp.), Parry's larkspur, blue dicks (*Dichelostemma capitatum*), golden yarrow (*Eriophyllum confertiflorum*), vinegar weed (*Trichostema lanceolatum*), slender sunflower (*Helianthus gracilentus*), phacelia (*Phacelia* sp.), chia (*Salvia columbariae*), and fescue (*Vulpia* sp.).

Buckwheat scrub is a subtype of Riversidian sage scrub also observed within Alternative 2. It may correspond to the California buckwheat series of Sawyer and Keeler-Wolf (1995). Buckwheat scrub is dominated by California buckwheat and deerweed. Associated shrub species include chamise, woolly blue-curles (*Trichostema lanatum*), California sagebrush, and black sage. Dominant annual grasses and forbs include fascicled tarweed (*Deinandra fasciculata*), cryptantha (*Cryptantha* sp.), wild oat, and red brome.

Riversidian sage scrub was mapped on the very southern end of Alternative 2. It was also found around the proposed Haskell Canyon Switching Station site, and in patches within the northern half of Segment K.

Interior Live Oak Chaparral

Interior live oak chaparral is a Holland type (Holland 1986) of chaparral dominated by dense, tall shrubs of interior live oak (*Quercus wislizenii* var. *frutescens*) and California scrub oak (*Quercus dumosa*). Holland (1986) describes this as a mesic form of chaparral that interdigitates with chamise chaparral, especially at higher elevations. It is widespread in the interior mountains of California, with a patchy distribution in southern California.

Interior live oak chaparral is dominated by interior live oak and California scrub oak. Associated shrubs include California buckwheat, hoaryleaf ceanothus (*Ceanothus crassifolius*), canyon gooseberry (*Ribes menziesii*), hoary coffeeberry (*Rhamnus tomentella*), and poison oak.

Interior live oak chaparral was observed within Segment 2a.

Scrub Oak Chaparral

The Holland type Scrub oak chaparral is a dense evergreen chaparral dominated by scrub oak (Holland 1986) that reaches 20 feet in height. It grows on rocky slopes, at slightly higher elevations, and in more mesic sites, than other types of chaparral. It is widespread in the coastal areas of northern California, the Sierra foothills and the mountains of southern California.

The species of scrub oak observed in most sites appeared to be California scrub oak; however, scrub oak also occurs within this area. Other shrub species present include deerbrush (*Ceanothus integerrimus*), California juniper (*Juniperus californica*), birchleaf mountain mahogany, holly-leaved cherry, and chaparral yucca.

Scrub oak chaparral was observed within patches throughout Segment I.

Southern Mixed Chaparral

Southern mixed chaparral is described by Holland (1986) as a type composed of deep-rooted sclerophyllous fire-adapted shrubs reaching 6 to 12 feet in height. There is a very sparse understory in mature stands. The dominant shrubs vary from place to place, but include chamise, California scrub oak

and one or more species of *Arctostaphylos* and *Ceanothus* (Holland 1986). This type is found on dry, rocky, steep slopes with little soil. It intergrades with chamise chaparral and may form a mosaic with Riversidian sage scrub. Corresponding series in Sawyer and Keeler-Wolf (1995) may include the chamise-bigberry manzanita series and the chamise-Eastwood's manzanita series.

Within the Project area, the dominant shrubs in southern mixed chaparral include chamise, Eastwood's manzanita (*Arctostaphylos glandulosa*), big-berry manzanita (*Arctostaphylos glauca*), California sagebrush, hoaryleaf ceanothus, and birchleaf mountain mahogany (*Cercocarpus betuloides*); associated species included interior goldenbush (*Ericameria linearifolia*), yerba santa, California buckwheat, scale-broom (*Lepidospartum squamatum*), deerweed, holly-leaved cherry, scrub oak, interior live oak, hoary coffeeberry, holly-leaved redberry, sugar bush (*Rhus ovata*), basketbush (*Rhus trilobata*), white sage, black sage, poison oak, and chaparral yucca.

The forb and grass layer includes wild oat, shortpod mustard, ripgut brome, red brome, sun cups, clarkia (*Clarkia* sp.), miner's lettuce, stiff-branch bird's beak (*Cordylanthus rigidus*), popcorn flower, Parry's larkspur (*Delphinium parryi*), slender buckwheat (*Eriogonum elongatum* var. *elongatum*), golden yarrow, cudweed (*Gnaphalium* sp.), vinegar weed, strigose bird's-foot-trefoil (*Lotus strigosus*), bajada lupine, showy penstemon (*Penstemon spectabilis*), phacelia, chia, chaparral nightshade (*Solanum xanti*), and fescue.

Southern mixed chaparral was mapped along much of the middle third of Alternative 2.

2.6 INVENTORY METHODS

The evaluation of biological resources within the ANF portion of the Project area included a review of applicable documents and the identification of resources during several aerial, reconnaissance-level surveys and focused surveys conducted by qualified biologists. During the development of alternative corridors for the proposed Project, reconnaissance surveys were conducted on every segment. The surveys consisted of a reconnaissance-level survey conducted aurally from a helicopter or from the ground within a 0.5 mile wide corridor buffer of the proposed transmission line corridor where access was available.

Vegetation community mapping was conducted using the California GAP-Analysis Program (GAP), 2005 aerial imaging from the National Agriculture Inventory Program (NAIP) California spatial library, and California Natural Diversity Database (CNDDB) data. Forest Service geographic information system (GIS) habitat data were used as the basis for the habitat-based assessment of the Project study corridors. GIS data layers were mapped within the study corridors (one mile wide biology study corridor) and plotted. The vegetation mapping was conducted using the GAP data but later refined based on field reconnaissance surveys. Information gathered from the literature review and reconnaissance-level field surveys were used to identify habitat for all threatened and endangered plant and wildlife species with potential to occur within the Project area. Protocol surveys were conducted in the spring and summer of 2008, 2009 and 2010 on all Project components to assess the presence of special-status plant and wildlife species (POWER 2008a, POWER 2008b, POWER 2009a, POWER 2009b, POWER 2009c, POWER 2010b, POWER 2010c, POWER 2010d, POWER 2010e, POWER 2010f, POWER 2010g). The details and methods used in this evaluation are presented below.

2.6.1 Protocol Surveys

Information gathered from the literature review and reconnaissance-level field surveys were used to identify habitat for all threatened and endangered, Forest Service Sensitive and Watch plant and wildlife species with potential to occur within the Project area. Protocol surveys were conducted in the spring and summer of 2008, 2009 and 2010 on all project components not covered in dense chaparral, at a distance of 250 feet either side of the proposed centerline and along existing access roads, to assess the presence of special-status plant and wildlife species (POWER 2008a, POWER 2008b, POWER 2009a, POWER

2009b, POWER 2009c, POWER 2010b, POWER 2010c, POWER 2010d, POWER 2010e, POWER 2010f, POWER 2010g).

The study corridors for the surveys were 150-meters (500 feet) wide (250 feet on each side of the transmission line centerline). Prior to conducting field surveys within the ANF, Forest Service and USFWS were consulted to determine survey needs and appropriate survey time frames. Protocol surveys were conducted for the arroyo toad and California red-legged frog, federal- and State-listed plant species, Forest Service Sensitive/Watch plant species, and CNPS List 1 and 2 species. Surveys were also conducted to determine presence of and suitable habitat for California spotted owl, special-status bat species, and special-status riparian bird species. Additionally, invasive weed surveys and an avian risk assessment were conducted (POWER 2009d, POWER 2010h).

Special-Status Plant Surveys

Botanical surveys were conducted in 2008, 2009 and 2010 with the goal of locating and mapping special-status plants. The surveys were floristic, meaning that all plants observed were identified to the taxonomic level needed to determine whether they were special-status plant species. Exceptions to this included instances where characteristics essential for identification were not present during the field survey period. Botanists identified all plant species detected during field surveys using personal knowledge of the plants and keys in *The Jepson Manual* (Hickman 1993). Scientific nomenclature in this report mainly follows Hickman (1993). Common names are derived from Hickman (1993) and CalFlora (2011). The survey methodology generally followed the USFWS' *Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed and Candidate Plants* (USFWS 1996a), and the recommended botanical survey guidelines of the California Department of Fish and Game (CDFG 2000) and the California Native Plant Society (CNPS 2011). Areas with dense, impenetrable chaparral and areas with very steep slopes that posed a safety hazard to surveyors were not surveyed. Within the surveyed segments, botanists used an intuitive approach to determine the route taken during meandering transects. The intuitive approach, recommended by Forest Service Botanist Katie VinZant, uses the botanist's knowledge of the preferred habitat of special-status plants to focus the survey effort on sites most likely to support them. Botanists recorded species observations with Trimble GEO-XT hand-held Global Positioning System (GPS) units using Terrasync software. These units were pre-loaded with maps of the proposed transmission line corridors, buffers, and U.S. Geological Survey (USGS) topographic maps as background files. GPS units were used for navigation, and to collect locational data (points and polygons) when special-status plant species were found.

Spotted Owl Focused Surveys

The California spotted owl survey followed the revised Forest Service methodology outlined in the 1993 Protocol for Surveying for Spotted Owls in Proposed Management Activities Areas and Habitat Conservation Areas (USFS 1993). The protocol prescribes surveys be conducted from March 1 to August 31 and that a total of six surveys be conducted per survey area, either by conducting all six surveys in one year or conducting three surveys per year over a two-year period.

Surveys were conducted from 2008 to 2010 between sunset and sunrise to maximize the potential for detection. These surveys were conducted using the spot calling method, where calling stations were established every 0.25 to 0.5-mile along potential habitat identified during the 2008 habitat assessment. Call stations were grouped into survey routes by proximity and Project segment. Each survey route was surveyed in a single survey outing. Call stations were placed at "outstanding" physiographic features such as prominent ridge points, saddles, and openings in the vegetation to ensure complete coverage of the survey area (USFS 1993). To ensure each survey was conducted at the same locations during each survey, a flag was placed at each call station and a GPS point was taken using a Garmin GPS unit. Each call station was surveyed for at least ten minutes per visit. The order in which each call station was surveyed was varied to reduce bias.

A total of 41 call stations were established along Segment G, at San Francisquito Canyon, Baird Canyon, Clearwater Canyon, Pettinger Canyon, Drinkwater Canyon, Spunky Canyon, South Portal Canyon, Craig Spring, and Grass Mountain. Because no potential habitat was identified during the habitat assessment, no call stations were established for Segment I. A total of three call stations were established along segment J at Dry Canyon. A total of nine call stations were established on Segment D at Fisher Spring, Oak Flat Spring, and Liebre Gulch.

Bat Surveys

Surveys were conducted for bat habitat and species within the BR RTP area during August 2008. Diurnal surveys were conducted to identify suitable roosting and foraging habitat in or near Project segments, while dusk surveys were conducted to observe bat activity at locations determined based on diurnal surveys. Dusk surveys only occurred within the ANF on Segments G and I. Acoustical monitoring of echolocation search and feeding calls were made with a Pettersson D240X Ultrasonic Detector; results were recorded on data sheets measured at fifteen-minute intervals. No invasive techniques were employed during surveys, and all surveys were limited to habitat inspections and visual and acoustical observations of active bats.

Avian Habitat Assessment

Surveys were conducted on ANF in June and August 2008 to evaluate suitable habitat for special-status bird species, including southwestern willow flycatcher, least Bell's vireo, western yellow-billed cuckoo, and coastal California gnatcatcher. Pre-field work included reviewing aerial photographs of the ANF and searching for existing recorded occurrences. Surveys occurred on Segments D, G, I, and J within 500-foot corridors. Potential habitat was defined as habitat that can support both breeding and foraging needs of the species. Both pedestrian and vehicular surveys were conducted as situations dictated. Particular attention was given to areas with previous records of special-status bird species and to riparian and coastal sage scrub habitats. Habitat was recorded with datasheets, photos, and GPS points that were subsequently incorporated into a GIS database.

Invasive Weed Species Surveys

Invasive species surveys were conducted concurrently with the protocol-level special status plant surveys. Locations were recorded using Trimble GEO-XT hand-held GPS units using TerraSync software. Species were mapped as either points or polygons depending on the size of the population.

Within the ANF, mapping included areas adjacent to corridor access roads. In some instances, the ANF botanist had previously mapped or noted invasive species along the access roads. This information is included in the survey report (POWER 2009d).

Avian Risk Assessment

An avian risk assessment was conducted following guidelines provided by the Avian Power Line Interaction Committee (APLIC). The risk assessment determined areas of greatest risk to birds and measures to avoid and mitigate avian risk. Areas identified as potential risks were evaluated in the field and documented using a GPS unit. This information was mapped and provided to the engineering design team to prioritize tower locations. In addition, power line design and avian safety education was provided to the design team.

Before conducting the avian risk assessment surveys, pre-survey research was conducted to determine avian species that have the potential to occur within the Project area. This list of potentially occurring species was compiled using the species lists from local chapters of the Audubon Society in Kern and Los Angeles Counties (Blue and Moore 1998), Edwards Air Force Base (Department of Defense undated),

and the Angeles National Forest (Garrett and Alcala 2008). The list included year-round residents, migratory species breeding or wintering in the area, and transitory migrants with a more vagrant occurrence in the Project area (POWER 2010h). Existing LADWP survey information was also used to document locations where avian nesting or presence had been previously observed (LSA 2007). For each potentially occurring species, information was compiled on the distribution, habitat preference, and any known sighting(s). In addition, seasonal wind patterns (Fisk 2007) and topographic data were overlaid to identify potential flyways in the entire Project area.

Surveys occurred during the spring and fall of 2008 (June 9 to 13 and September 22 to 26). Spring surveys were conducted to characterize habitat and document species occurrence and nesting activity across the entire Project area. Datapoints were taken approximately every mile, or at smaller intervals when notable changes were observed (i.e., topography, vegetation community, bird and/or nest presence). After assessing spring survey data and additional data, such as typical wind currents throughout the project area, areas of higher risk were determined. Fall surveys were conducted to refine data on high-risk locations and continue gathering activity data across the project area. Morning surveys generally consisted of surveying large water bodies within the corridors to gather information on waterfowl presence and activity, while afternoon surveys consisted of gathering data along the remaining, linear portions of the segments.

Post-survey analysis of field data consisted of applying a series of avian-risk factors to the Project segments. These factors were split into two categories: collision factors which increase the risk of collision (i.e., topography, wind direction, and transmission line placement) and ecological resource enhancements which tend to concentrate avian species into certain areas (i.e., nearby water, canyons and valleys). Each factor was then applied to each one-mile interval of all segments using GIS and field data to determine how many total risk factors were present along any given area of the Project (POWER 2010h).

Tables 5 and 6 summarize the field evaluation for TEPS species within the Project area. The potential for Project effects was determined based upon the probability of direct, indirect, and cumulative effects related to the proposed activities. Species will not be carried forward through the effects discussion if the site does not contain suitable habitat, there is no record of occurrence, the species has been extirpated, or other circumstances exist which preclude potential occupancy.

3.0 SPECIES ACCOUNTS AND STATUS OF SPECIES IN THE ANF ACTION AREA

This section provides an overview of the listing status, ecology and local distribution for the sensitive species identified by the Forest Service. The information is based on relevant literature, recovery plans, and data provided by the Forest Service, CDFG, or USFWS. Data from recent Project area surveys conducted from 2008 to 2010 are included, as appropriate. For species listed under the Endangered Species Act (ESA), refer to the BRRTTP Biological Assessment.

TABLE 5. LISTED AND FOREST SERVICE SPECIES

Species Name ¹	Habitat Requirements ²		
		Reconductoring	New 230kV Circuit
<i>Androsace elongata</i> ssp. <i>acuta</i> California androsace	Chaparral, cismontane woodland, coastal scrub, meadows and seeps, pinyon and juniper woodland, and valley and foothill grassland. 490 – 3,940 feet	NF: Possible. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riverside Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment J: Possible. Suitable habitat exists in Chamise Chaparral and Riverside Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
<i>Arenaria macradenia</i> var. <i>kuschei</i> Kusche's sandwort	Openings in chaparral, on granitic soils. 4,000 – 5,600 feet	NF: Possible. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment J: Unlikely. Suitable habitat exists in Chamise Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.
<i>Arctostaphylos glandulosa</i> ssp. <i>gabrielensis</i> San Gabriel Manzanita	Chaparral. 4,995 feet	NF: Unlikely. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.	Segment J: Unlikely. Suitable habitat exists in Chamise Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.
<i>Astragalus bicristatus</i> crested milk-vetch	Lower montane coniferous forest, upper montane coniferous forest; sandy or rocky soils, mostly carbonate. 5,580 – 9,005 feet	NF: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment J: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.
<i>Astragalus lentiginosus</i> var. <i>antoniui</i> San Antonio milk-vetch	Lower montane coniferous forest, upper montane coniferous forest. 4,920 – 8,530 feet in elevation.	NF: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment J: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.
<i>Astragalus lentiginosus</i> var. <i>sierrae</i> Big Bear Valley milk-vetch	Mojavean desert scrub, meadows and seeps, pinyon and juniper woodland, and upper montane coniferous forest. 5,994 – 8,660 feet	NF: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment.	Segment J: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment.
<i>Botrychium crenulatum</i> scalloped moonwort	Bogs and fens, lower montane coniferous forest, meadows and seeps, and marshes and swamps. 5,000 – 10,765 feet	NF: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment J: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.
<i>Calochortus clavatus</i> var. <i>gracilis</i> slender mariposa lily	Chaparral, coastal scrub, and valley and foothill grassland. 1,050 – 3,330 feet	NF: Present. Species known within segment corridor. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riverside Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.	Segment J: Likely. Suitable habitat exists in Chamise Chaparral and Riverside Sage Scrub; elevation is appropriate; and species is known within 10 miles of segment.

and the Angeles National Forest (Garrett and Alcala 2008). The list included year-round residents, migratory species breeding or wintering in the area, and transitory migrants with a more vagrant occurrence in the Project area (POWER 2010h). Existing LADWP survey information was also used to document locations where avian nesting or presence had been previously observed (LSA 2007). For each potentially occurring species, information was compiled on the distribution, habitat preference, and any known sighting(s). In addition, seasonal wind patterns (Fisk 2007) and topographic data were overlaid to identify potential flyways in the entire Project area.

Surveys occurred during the spring and fall of 2008 (June 9 to 13 and September 22 to 26). Spring surveys were conducted to characterize habitat and document species occurrence and nesting activity across the entire Project area. Datapoints were taken approximately every mile, or at smaller intervals when notable changes were observed (i.e., topography, vegetation community, bird and/or nest presence). After assessing spring survey data and additional data, such as typical wind currents throughout the project area, areas of higher risk were determined. Fall surveys were conducted to refine data on high-risk locations and continue gathering activity data across the project area. Morning surveys generally consisted of surveying large water bodies within the corridors to gather information on waterfowl presence and activity, while afternoon surveys consisted of gathering data along the remaining, linear portions of the segments.

Post-survey analysis of field data consisted of applying a series of avian-risk factors to the Project segments. These factors were split into two categories: collision factors which increase the risk of collision (i.e., topography, wind direction, and transmission line placement) and ecological resource enhancements which tend to concentrate avian species into certain areas (i.e., nearby water, canyons and valleys). Each factor was then applied to each one-mile interval of all segments using GIS and field data to determine how many total risk factors were present along any given area of the Project (POWER 2010h).

Tables 5 and 6 summarize the field evaluation for TEPS species within the Project area. The potential for Project effects was determined based upon the probability of direct, indirect, and cumulative effects related to the proposed activities. Species will not be carried forward through the effects discussion if the site does not contain suitable habitat, there is no record of occurrence, the species has been extirpated, or other circumstances exist which preclude potential occupancy.

3.0 SPECIES ACCOUNTS AND STATUS OF SPECIES IN THE ANF ACTION AREA

This section provides an overview of the listing status, ecology and local distribution for the sensitive species identified by the Forest Service. The information is based on relevant literature, recovery plans, and data provided by the Forest Service, CDFG, or USFWS. Data from recent Project area surveys conducted from 2008 to 2010 are included, as appropriate. For species listed under the Endangered Species Act (ESA), refer to the BR RTP Biological Assessment.

TABLE 5. LISTED AND FOREST SERVICE SENSITIVE PLANT SPECIES POTENTIALLY OCCURRING WITHIN THE ANGELES NATIONAL FOREST AND POTENTIAL TO AFFECT

Species Name ¹	Habitat Requirements ²	Flowering period ²	Conservation Status ³	Potential for Occurrence within the Project Area ⁴					
				Alternative 1	Alternative 2	Alternative 2a	Alternative 3	Reconductoring	New 230kV Circuit
<i>Androsace elongata</i> ssp. <i>acuta</i> California androsace	Chaparral, cismontane woodland, coastal scrub, meadows and seeps, pinyon and juniper woodland, and valley and foothill grassland. 490 – 3,940 feet	March – June	Fed: None CA: None CNPS: 4.2 USFS: Watch List	Segment D: Possible. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Mojave Creosote Bush Scrub, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment G: Possible. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment G: Possible. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. Segment 2a: Possible. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment I: Possible. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	ANF: Possible. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment J: Possible. Suitable habitat exists in Chamise Chaparral and Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
<i>Arenaria macradenia</i> var. <i>kuschei</i> Kusche's sandwort	Openings in chaparral, on granitic soils. 4,000 – 5,600 feet	June – July	Fed: None CA: None CNPS: 1B.1 USFS Sensitive	Segment D: Unlikely. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.	Segment G: Possible. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment G: Possible. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. Segment 2a: Possible. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment I: Possible. Suitable habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	ANF: Possible. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment J: Unlikely. Suitable habitat exists in Chamise Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.
<i>Arctostaphylos glandulosa</i> ssp. <i>gabrielensis</i> San Gabriel Manzanita	Chaparral. 4,995 feet	March	Fed: None CA: None CNPS: 1B.2 USFS Sensitive	Segment D: Unlikely. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.	Segment G: Unlikely. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.	Segment G: Unlikely. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment. Segment 2a: Unlikely. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.	Segment I: Unlikely. Suitable habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.	ANF: Unlikely. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.	Segment J: Unlikely. Suitable habitat exists in Chamise Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.
<i>Astragalus bicristatus</i> crested milk-vetch	Lower montane coniferous forest, upper montane coniferous forest, sandy or rocky soils, mostly carbonate. 5,580 – 9,005 feet	May – August	Fed: None CA: None CNPS: 4.3 USFS Sensitive	Segment D: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment G: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment G: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. Segment 2a: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment I: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	ANF: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment J: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.
<i>Astragalus lentiginosus</i> var. <i>antonius</i> San Antonio milk-vetch	Lower montane coniferous forest, upper montane coniferous forest. 4,920 – 8,530 feet in elevation.	April – July	Fed: None CA: None CNPS: 1B.3 USFS Sensitive	Segment D: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment G: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment G: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. Segment 2a: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment I: Absent. No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment.	ANF: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment J: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.
<i>Astragalus lentiginosus</i> var. <i>sierrae</i> Big Bear Valley milk-vetch	Mojavean desert scrub, meadows and seeps, pinyon and juniper woodland, and upper montane coniferous forest. 5,994 – 8,660 feet	April – August	Fed: None CA: None CNPS: 1B.2 USFS Sensitive	Segment D: Unlikely. Suitable habitat exists in Joshua Tree Woodland and Mojave Creosote Bush Scrub; elevation is not appropriate; and species is not known within 10 miles of segment.	Segment G: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment.	Segment G: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. Segment 2a: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment.	Segment I: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment.	ANF: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment.	Segment J: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment.
<i>Botrychium crenulatum</i> scalloped moonwort	Bogs and fens, lower montane coniferous forest, meadows and seeps, and marshes and swamps. 5,000 – 10,765 feet	June – July	Fed: None CA: None CNPS: 2.2 USFS: Sensitive	Segment D: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment G: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment G: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. Segment 2a: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment I: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	ANF: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment J: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.
<i>Calochortus clavatus</i> var. <i>gracilis</i> slender mariposa lily	Chaparral, coastal scrub, and valley and foothill grassland. 1,050 – 3,330 feet	March – June	Fed: None CA: None CNPS: 1B.2 USFS: Sensitive	Segment D: Present. Species known within segment corridor. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Mojave Creosote Bush Scrub, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.	Segment G: Present. Species known within segment corridor. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.	Segment G: Present. Species known within segment corridor. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment. Segment 2a: Likely. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.	Segment I: Present. Species known within segment corridor. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is known within 10 miles of segment.	ANF: Present. Species known within segment corridor. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.	Segment J: Likely. Suitable habitat exists in Chamise Chaparral and Riversidian Sage Scrub; elevation is appropriate; and species is known within 10 miles of segment.

Potential for Occurrence within the Project Area ⁴			
Alternative 2a	Alternative 3	Reconductoring	New 230kV Circuit
<p>Segment G: Likely. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.</p> <p>Segment 2a: Possible. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.</p>	<p>Segment I: Possible. Suitable habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.</p>	<p>ANF: Likely. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.</p>	<p>Segment J: Unlikely. Suitable habitat exists in Chamise Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.</p>
<p>Segment G: Likely. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.</p> <p>Segment 2a: Possible. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.</p>	<p>Segment I: Likely. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is known within 10 miles of segment.</p>	<p>ANF: Likely. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.</p>	<p>Segment J: Likely. Suitable habitat exists in Chamise Chaparral and Riversidian Sage Scrub; elevation is appropriate; and species is known within 10 miles of segment.</p>
<p>Segment G: Likely. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.</p> <p>Segment 2a: Likely. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.</p>	<p>Segment I: Likely. Suitable habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is known within 10 miles of segment.</p>	<p>ANF: Likely. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.</p>	<p>Segment J: Possible. Suitable habitat exists in Chamise Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.</p>
<p>Segment G: Possible. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.</p> <p>Segment 2a: Possible. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.</p>	<p>Segment I: Possible. Suitable habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.</p>	<p>ANF: Possible. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.</p>	<p>Segment J: Possible. Suitable habitat exists in Chamise Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.</p>
<p>Segment G: Absent. No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment.</p> <p>Segment 2a: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.</p>	<p>Segment I: Possible While suitable habitat is not known on this segment according to GAP data, it is likely that small patches of habitat may be present in the northern portions; elevation is appropriate; and species is known within 10 miles of segment.</p>	<p>ANF: Absent. No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment.</p>	<p>Segment J: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.</p>
<p>Segment G: Absent. No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment. Segment 2a: Absent. No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment.</p>	<p>Segment I: Absent. No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment.</p>	<p>ANF: Absent. No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment.</p>	<p>Segment J: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.</p>
<p>Segment G: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.</p> <p>Segment 2a: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.</p>	<p>Segment I: Possible While suitable habitat is not known on this segment according to GAP data, it is likely that small patches of habitat may be present in the northern portions; and species is not known within 10 miles of segment.</p>	<p>ANF: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.</p>	<p>Segment J: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.</p>
<p>Segment G: Likely. Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.</p> <p>Segment 2a: Likely. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.</p>	<p>Segment I: Likely. Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is known within 10 miles of segment.</p>	<p>ANF: Likely. Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.</p>	<p>Segment J: Likely. Suitable habitat exists in Chamise Chaparral and Riversidian Sage Scrub; elevation is appropriate; and species is known within 10 miles of segment.</p>

Species Name ¹	Habitat Requirements ²		
		Reconductoring	New 230kV Circuit
<i>Claytonia lanceolata</i> var. <i>peirsonii</i> Peirson's spring beauty	Subalpine coniferous forest, upper montane coniferous forest; on scree. 7,005 – 9,005 feet	NF: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment J: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.
<i>Deinandra mohavensis</i> Mojave tarplant	Chaparral, coastal scrub, and riparian scrub; mesic soils. 2,100 – 5,250 feet	NF: Likely. Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.	Segment J: Possible. Suitable habitat exists in Chamise Chaparral and Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
<i>Dudleya cymosa</i> ssp. <i>crebrifolia</i> San Gabriel River dudleya	Chaparral; granitic soils. 900 – 1,500 feet	NF: Unlikely. Marginal habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment J: Unlikely. Marginal habitat exists in Chamise Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
<i>Dudleya densiflora</i> San Gabriel Mountains Dudleya	Chaparral, coastal scrub, lower montane coniferous forest, in crevices and on decomposed granite on cliffs and canyon walls. 800 – 2,000 feet	NF: Possible. Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment J: Possible. Suitable habitat exists in Chamise Chaparral and Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
<i>Dudleya multicaulis</i> many-stemmed dudleya	Coastal scrub, chaparral, and valley and foothill grassland; usually on clay soils or grassy slopes. 45 – 2,590 feet	NF: Likely. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.	Segment J: Possible. Suitable habitat exists in Chamise Chaparral and Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
<i>Eriogonum kennedyi</i> var. <i>alpigenum</i> Southern alpine buckwheat	Alpine boulder and rock fields, subalpine coniferous forest; granitic, gravelly soils. 8,530 – 11,480 feet	NF: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment J: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.
<i>Eriogonum microthecum</i> var. <i>johnstonii</i> Johnston's buckwheat	Subalpine coniferous forest, upper montane coniferous forest; rocky soils. 7,300 – 9,515 feet	NF: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment J: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.
<i>Galium grande</i> San Gabriel bedstraw	Cismontane woodland, chaparral, broadleaved upland forest, lower montane coniferous forest. Microhabitat of open chaparral and low, open oak forest and rocky slopes. 1,400 – 4,920 feet	NF: Likely. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.	Segment J: Likely. Suitable habitat exists in Chamise Chaparral; elevation is appropriate; and species is known within 10 miles of segment.

Species Name ¹	Habitat Requirements ²	Flowering period ²	Conservation Status ³	Potential for Occurrence within the Project Area ⁴					
				Alternative 1	Alternative 2	Alternative 2a	Alternative 3	Reconductoring	New 230kV Circuit
<i>Claytonia lanceolata</i> var. <i>peirsonii</i> Peirson's spring beauty	Subalpine coniferous forest, upper montane coniferous forest; on scree. 7,005 – 9,005 feet	May – June	Fed: None CA: None CNPS: 1B.1 USFS: Sensitive	Segment D: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment G: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment G: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. Segment 2a: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment I: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	ANF: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment J: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.
<i>Deinandra mohavensis</i> Mojave tarplant	Chaparral, coastal scrub, and riparian scrub; mesic soils. 2,100 – 5,250 feet	June –January	Fed: None CA: None CNPS: 1B.3 USFS: Sensitive BLM: SS	Segment D: Possible. Suitable habitat exists in Chamise Chaparral, Mojave Creosote Bush Scrub, Riverside Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment G: Likely. Suitable habitat exists in Chamise Chaparral, Riverside Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.	Segment G: Likely. Suitable habitat exists in Chamise Chaparral, Riverside Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment. Segment 2a: Possible. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment I: Possible. Suitable habitat exists in Chamise Chaparral, Riverside Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	ANF: Likely. Suitable habitat exists in Chamise Chaparral, Riverside Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.	Segment J: Possible. Suitable habitat exists in Chamise Chaparral and Riverside Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
<i>Dudleya cymosa</i> ssp. <i>crebrifolia</i> San Gabriel River dudleya	Chaparral; granitic soils. 900 – 1,500 feet	April – July	Fed: None CA: None CNPS: 1B.2 USFS: Sensitive	Segment D: Unlikely. Marginal habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment G: Unlikely. Marginal habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment G: Unlikely. Marginal habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. Segment 2a: Unlikely. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.	Segment I: Unlikely. Marginal habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	ANF: Unlikely. Marginal habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment J: Unlikely. Marginal habitat exists in Chamise Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
<i>Dudleya densiflora</i> San Gabriel Mountains Dudleya	Chaparral, coastal scrub, lower montane coniferous forest; in crevices and on decomposed granite on cliffs and canyon walls. 800 – 2,000 feet	March –July	Fed: None CA: None CNPS: 1B.1 USFS: Sensitive	Segment D: Possible. Suitable habitat exists in Chamise Chaparral, Mojave Creosote Bush Scrub, Riverside Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment G: Possible. Suitable habitat exists in Chamise Chaparral, Riverside Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment G: Possible. Suitable habitat exists in Chamise Chaparral, Riverside Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. Segment 2a: Unlikely. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.	Segment I: Possible. Suitable habitat exists in Chamise Chaparral, Riverside Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	ANF: Possible. Suitable habitat exists in Chamise Chaparral, Riverside Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment J: Possible. Suitable habitat exists in Chamise Chaparral and Riverside Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
<i>Dudleya multicaulis</i> many-stemmed dudleya	Coastal scrub, chaparral, and valley and foothill grassland; usually on clay soils or grassy slopes. 45 – 2,590 feet	April – July	Fed: None CA: None CNPS: 1B.2 USFS: Sensitive	Segment D: Possible. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Mojave Creosote Bush Scrub, Riverside Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment G: Likely. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riverside Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.	Segment G: Likely. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riverside Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment. Segment 2a: Possible. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment I: Possible. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riverside Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	ANF: Likely. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riverside Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.	Segment J: Possible. Suitable habitat exists in Chamise Chaparral and Riverside Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
<i>Eriogonum kennedyi</i> var. <i>alpigenum</i> Southern alpine buckwheat	Alpine boulder and rock fields, subalpine coniferous forest; granitic, gravelly soils. 8,530 – 11,480 feet	July – September	Fed: None CA: None CNPS: 1B.3 USFS: Sensitive	Segment D: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment G: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment G: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. Segment 2a: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment I: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	ANF: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment J: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.
<i>Eriogonum microthecum</i> var. <i>johnstonii</i> Johnston's buckwheat	Subalpine coniferous forest, upper montane coniferous forest; rocky soils. 7,300 – 9,515 feet	July – September	Fed: None CA: None CNPS: 1B.3 USFS: Sensitive	Segment D: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment G: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment G: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. Segment 2a: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment I: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	ANF: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment J: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.
<i>Galium grande</i> San Gabriel bedstraw	Cismontane woodland, chaparral, broadleaved upland forest, lower montane coniferous forest. Microhabitat of open chaparral and low, open oak forest and rocky slopes. 1,400 – 4,920 feet	January – July	Fed: None CA: None CNPS: 1B.2 USFS: Sensitive	Segment D: Likely. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.	Segment G: Likely. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.	Segment G: Likely. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment. Segment 2a: Likely. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.	Segment I: Likely. Suitable habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is known within 10 miles of segment.	ANF: Likely. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.	Segment J: Likely. Suitable habitat exists in Chamise Chaparral; elevation is appropriate; and species is known within 10 miles of segment.

[illegible]

Species Name ¹	Habitat Requirements ²		
		Reconductoring	New 230kV Circuit
<i>Lepechinia rossii</i> Ross' pitcher sage	Chaparral. 1,000 – 2,590 feet	NF: Likely. Suitable habitat exists in Chamise Chaparral and southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.	Segment J: Likely. Suitable habitat exists in Chamise Chaparral; elevation is appropriate; and species is known within 10 miles of segment.
<i>Lilium humboldtii</i> ssp. <i>ocellatum</i> ocellated lily	Chaparral, cismontane woodland, coastal scrub, lower montane coniferous forest, openings in riparian woodland. 100 – 3,995 feet	NF: Possible. Suitable habitat exists in Chamise Chaparral, Riverside Sage Scrub, and southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment J: Possible. Suitable habitat exists in Chamise Chaparral and Riverside Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
<i>Lilium parryi</i> lemon lily	Upper and lower montane coniferous forest, meadows and seeps, riparian forest; mesic or boggy areas. 4,270 – 8,600 feet	NF: Absent. No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment.	Segment J: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.
<i>Linanthus concinnus</i> San Gabriel linanthus	Lower and upper montane coniferous forest; rocky soils, dry slopes. 5,170 – 9,190 feet	NF: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment J: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.
<i>Lupinus peirsonii</i> Peirson's lupine	Joshua tree woodland, lower montane coniferous forest, pinyon and juniper woodland, upper montane coniferous forest; gravelly or rocky sites. 3,280 – 8,325 feet	NF: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.	Segment J: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment.
<i>Monardella macrantha</i> ssp. <i>hallii</i> Hall's monardella	Broadleaved upland forest, chaparral, lower montane coniferous forest, cismontane woodland, valley and foothill grassland; openings, dry slopes and ridges. 2,395 – 7,200 feet	NF: Possible. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment J: Possible. Suitable habitat exists in Chamise Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
<i>Monardella viridis</i> var. <i>saxicola</i> rock monardella	Broadleaved upland forest, chaparral, cismontane woodland. 1,640 – 5,910 feet	NF: Unlikely. Marginal habitat exists in Chamise Chaparral and southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment J: Unlikely. Marginal habitat exists in Chamise Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
<i>Navaretia peninsularis</i> Baja navaretia	Chaparral (openings) and lower montane coniferous forest; mesic soils. 4,920 – 7,550 feet	NF: Unlikely. Suitable habitat exists in Chamise Chaparral and southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.	Segment J: Unlikely. Suitable habitat exists in Chamise Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.

Species Name ¹	Habitat Requirements ²	Flowering period ²	Conservation Status ³	Potential for Occurrence within the Project Area ⁴					
				Alternative 1	Alternative 2	Alternative 2a	Alternative 3	Reconductoring	New 230kV Circuit
<i>Heuchera abramsii</i> Abram's alumroot	Upper montane coniferous forest; rocky areas. 9,325 – 11,655 feet	July –August	Fed: None CA: None CNPS: 4.3 USFS: Sensitive	Segment D: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment G: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment G: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. Segment 2a: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment I: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	ANF: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment J: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.
<i>Heuchera elegans</i> urn-flowered alumroot	Cismontane woodland, lower montane coniferous forest, montane riparian forest, upper montane coniferous forest; rocky habitat. 3,790 – 8,825 feet	May – August	Fed: None CA: None CNPS: 4.3 USFS: Sensitive	Segment D: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment.	Segment G: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.	Segment G: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. Segment 2a: Possible. Suitable habitat exists in Interior Live Oak Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment I: Possible. Suitable habitat exists in Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	ANF: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.	Segment J: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment.
<i>Horkelia cuneata</i> ssp. <i>puberula</i> mesa horkelia	Maritime chaparral, cismontane woodland, gravelly or sandy coastal scrub. 230 – 2,660 feet	February – July (Sept. is unusual)	Fed: None CA: None CNPS: 1B.1 USFS: Sensitive	Segment D: Possible. Suitable habitat exists in Chamise Chaparral, Mojave Creosote Bush Scrub, Riversidean Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment G: Possible. Suitable habitat exists in Chamise Chaparral, Riversidean Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment G: Possible. Suitable habitat exists in Chamise Chaparral, Riversidean Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. Segment 2a: Possible. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment I: Possible. Suitable habitat exists in Chamise Chaparral, Riversidean Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	ANF: Possible. Suitable habitat exists in Chamise Chaparral, Riversidean Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment J: Possible. Suitable habitat exists in Chamise Chaparral and Riversidean Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
<i>Hulsea vestita</i> ssp. <i>gabrielensis</i> San Gabriel Mountains sunflower	Lower and upper montane coniferous forest; rocky habitat. 4,995 – 8,325 feet	May – July	Fed: None CA: None CNPS: 4.3 USFS: Sensitive	Segment D: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment G: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment G: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. Segment 2a: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment I: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	ANF: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment J: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.
<i>Hulsea vestita</i> ssp. <i>pygmaea</i> pygmy alpine gold	Alpine boulder and rock fields, subalpine coniferous forest; granitic or gravelly sites. 9,440 – 12,990 feet	June – October	Fed: None CA: None CNPS: 1B.3 USFS: Sensitive	Segment D: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment G: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment G: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. Segment 2a: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment I: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	ANF: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment J: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.
<i>Imperata brevifolia</i> California satintail	Chaparral, coastal scrub, Mojavean desert scrub, meadows and seeps (often alkali), riparian scrub in mesic soil. 0 – 1,640 feet	September – May	Fed: None CA: None CNPS: 2.1 USFS: Sensitive	Segment D: Possible. Suitable habitat exists in Chamise Chaparral, Joshua Tree Woodland Mojave Creosote Bush Scrub, Riversidean Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment G: Possible. Suitable habitat exists in Chamise Chaparral, Riversidean Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment G: Possible. Suitable habitat exists in Chamise Chaparral, Riversidean Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. Segment 2a: Unlikely. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.	Segment I: Possible. Suitable habitat exists in Chamise Chaparral, Riversidean Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	ANF: Possible. Suitable habitat exists in Chamise Chaparral, Riversidean Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment J: Possible. Suitable habitat exists in Chamise Chaparral and Riversidean Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
<i>Juglans californica</i> Southern California black walnut	Chaparral, cismontane woodland, and alluvial coastal scrub. 60 – 2,950 feet	March – August	Fed: None CA: None CNPS: 4.2 USFS Watch List	Segment D: Possible. Suitable habitat exists in Chamise Chaparral, Mojave Creosote Bush Scrub, Riversidean Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment G: Possible. Suitable habitat exists in Chamise Chaparral, Riversidean Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment G: Possible. Suitable habitat exists in Chamise Chaparral, Riversidean Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. Segment 2a: Possible. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment I: Possible. Suitable habitat exists in Chamise Chaparral, Riversidean Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	ANF: Possible. Suitable habitat exists in Chamise Chaparral, Riversidean Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment J: Possible. Suitable habitat exists in Chamise Chaparral and Riversidean Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
<i>Lepechinia fragrans</i> fragrant pitcher sage	Chaparral. 70 – 4,360 feet	March – October	Fed: None CA: None CNPS: 4.2 USFS: Sensitive	Segment D: Unlikely. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment G: Unlikely. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment G: Unlikely. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. Segment 2a: Possible. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment I: Possible. Suitable habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	ANF: Unlikely. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment J: Unlikely. Suitable habitat exists in Chamise Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Species Name ¹	Habitat Requirements ²	Flowering period ²	Conservation Status ³	Potential for Occurrence within the Project Area ⁴					
				Alternative 1	Alternative 2	Alternative 2a	Alternative 3	Reconductoring	New 230kV Circuit
<i>Lepechinia rossii</i> Ross' pitcher sage	Chaparral. 1,000 – 2,590 feet	May - September	Fed: None CA: None CNPS: 1B.2 USFS: Sensitive	Segment D: Likely. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.	Segment G: Likely. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.	Segment G: Likely. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment. Segment 2a: Likely. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.	Segment I: Likely. Suitable habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is known within 10 miles of segment.	ANF: Likely. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.	Segment J: Likely. Suitable habitat exists in Chamise Chaparral; elevation is appropriate; and species is known within 10 miles of segment.
<i>Lilium humboldtii</i> ssp. <i>ocellatum</i> ocellated lily	Chaparral, cismontane woodland, coastal scrub, lower montane coniferous forest, openings in riparian woodland. 100 – 3,995 feet	March – July (August is unusual)	Fed: None CA: None CNPS: 4.2 USFS: Watch List	Segment D: Possible. Suitable habitat exists in Chamise Chaparral, Mojave Creosote Bush Scrub, Riversidean Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment G: Possible. Suitable habitat exists in Chamise Chaparral, Riversidean Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment G: Possible. Suitable habitat exists in Chamise Chaparral, Riversidean Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. Segment 2a: Possible. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment I: Possible. Suitable habitat exists in Chamise Chaparral, Riversidean Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	ANF: Possible. Suitable habitat exists in Chamise Chaparral, Riversidean Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment J: Possible. Suitable habitat exists in Chamise Chaparral and Riversidean Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
<i>Lilium parryi</i> lemon lily	Upper and lower montane coniferous forest, meadows and seeps, riparian forest; mesic or boggy areas. 4,270 – 8,600 feet	July – August	Fed: None CA: None CNPS: 1B.2 USFS: Sensitive	Segment D: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment G: Absent. No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment.	Segment G: Absent. No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment. Segment 2a: Absent. No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment.	Segment I: Absent. No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment.	ANF: Absent. No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment.	Segment J: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.
<i>Linanthus concinnus</i> San Gabriel linanthus	Lower and upper montane coniferous forest; rocky soils, dry slopes. 5,170 – 9,190 feet	April – July	Fed: None CA: None CNPS: 1B.2 USFS: Sensitive	Segment D: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment G: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment G: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. Segment 2a: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment I: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	ANF: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment J: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.
<i>Lupinus peirsonii</i> Peirson's lupine	Joshua tree woodland, lower montane coniferous forest, pinyon and juniper woodland, upper montane coniferous forest; gravelly or rocky sites. 3,280 – 8,325 feet	April – June	Fed: None CA: None CNPS: 1B.3 USFS: Sensitive	Segment D: Possible. Suitable habitat exists in Joshua Tree Woodland; elevation is appropriate; and species is not known within 10 miles of segment.	Segment G: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.	Segment G: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. Segment 2a: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.	Segment I: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.	ANF: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.	Segment J: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment.
<i>Monardella macrantha</i> ssp. <i>hallii</i> Hall's monardella	Broadleaved upland forest, chaparral, lower montane coniferous forest, cismontane woodland, valley and foothill grassland; openings, dry slopes and ridges. 2,395 – 7,200 feet	June –October	Fed: None CA: None CNPS: 1B.3 USFS: Sensitive	Segment D: Possible. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment G: Possible. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment G: Possible. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. Segment 2a: Possible. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment I: Possible. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	ANF: Possible. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment J: Possible. Suitable habitat exists in Chamise Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
<i>Monardella viridis</i> var. <i>saxicola</i> rock monardella	Broadleaved upland forest, chaparral, cismontane woodland. 1,640 – 5,910 feet	July – September	Fed: None CA: None CNPS: 4.2 USFS: Sensitive	Segment D: Unlikely. Marginal habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment G: Unlikely. Marginal habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment G: Unlikely. Marginal habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. Segment 2a: Unlikely. Marginal habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment I: Unlikely. Marginal habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	ANF: Unlikely. Marginal habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment J: Unlikely. Marginal habitat exists in Chamise Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
<i>Navarretia peninsularis</i> Baja navarretia	Chaparral (openings) and lower montane coniferous forest; mesic soils. 4,920 – 7,550 feet	June – August	Fed: None CA: None CNPS: 1B.2 USFS: Sensitive	Segment D: Unlikely. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.	Segment G: Unlikely. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.	Segment G: Unlikely. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment. Segment 2a: Unlikely. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.	Segment I: Possible. Suitable habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	ANF: Unlikely. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.	Segment J: Unlikely. Suitable habitat exists in Chamise Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.

Habitat Requirements	Alternative 1	Alternative 2	Alternative 2a	Alternative 3	Reconductoring	New Circuit
	Segments A, C, D	Segments A, B, G	Segments A, B, G, 2a	Segments A, B, E, I	Segments A, B, G, K	Segment J
Large scrub and chaparral in arid and semi-arid conditions. Prefers friable, rocky, or sandy soils.	Pr	Pr	Pr	L	Pr	Pr
Wetlands from vicinity of Salinas to the San Joaquin River in California. From sea level to 100 feet elevation. Highly aquatic, requires permanent fresh water, often along with riparian beds and riparian vegetation.	U	L	L	Po	L	Po

occurrence

Record exists in the vicinity of the project, including historical distributions, species ranges, and recent

3.1 SPECIES ACCOUNTS

3.1.1 Plants

Protocol-level field surveys for special-status plants were conducted during spring and summer dates in 2008, 2009, and 2010. Plant species observed within the Project limits are listed in the Appendix. The list is not intended to be comprehensive and include all species present in the area, but only those observed during surveys. The area may support other species not presented in the observed species list that are annuals or only produce vegetative growth immediately after exposure to fire and would not have been growing at the time of the survey. Several sensitive species were observed near the Project area, including slender mariposa lily (*Calochortus clavatus* var. *gracilis*), and short-joint beavertail (*Opuntia basilaris* var. *brachyclada*). Table 5 contains a list of sensitive and listed plant species which could occur within the ANF along with their potentials to occur within the forested Project area. Plants which are determined to be likely to occur or are known within the Project area are described in further detail below with species accounts and direct, indirect, and cumulative impacts. Due to similarities in potential effects for plants within this particular Project area, potential effects are not repeated for each species and are instead grouped together in one section. Watch List species are not repeated below, as they are already listed in Table 5 above.

California Androsace

California androsace (*Androsace elongata* ssp. *acuta*) is a white-flowered annual herb in the Primrose Family (*Primulaceae*) that blooms during March to June (CNPS 2011). California androsace is associated with grassland, chaparral, coastal sage scrub, meadows and seeps, semi-desert shrub, pinyon-juniper woodland, and cismontane woodland at elevations of 490 to 3,940 feet (CNPS 2011). It typically occurs on dry grassy slopes and where vegetation cover is low and mesic conditions are present, such as on and adjacent to moss-covered soil or rock outcrops on north-facing slopes or along rocky washes (Hickman 1993, USFS 2005c). It is the only subspecies of California androsace known from California (USFS 2005c). California androsace is not federally or State listed. It is included on List 4.2 by the CNPS (CNPS 2011) and is included on the Forest Service watch list. Threats to California androsace may include grazing, trampling, fuels and vegetation management, invasive species (primarily cheatgrass), too-frequent fire, and recreational activities (USFS 2005c).

There are historical collections of California androsace from the Elizabeth Lake Canyon in the ANF; a recent collection from Liebre Mountain confirms that this species persists on the ANF (USFS 2005c).

Considering its geographic range and habitat preferences, California androsace has a possible potential to occur on all segments within the Project area. No locations for California androsace were found during 2008, 2009, or 2010 protocol-level surveys conducted for this Project on ANF lands (POWER 2008a, POWER 2010b, POWER 2010c). **Segments in which California androsace may occur are described below.**

Alternative 1 (Segment D): Possible. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Mojave Creosote Bush Scrub, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Alternatives 2, 2a (Segment G): Possible. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Alternative 2a (Segment 2a): Possible. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Species Name ¹	Habitat Requirements ²	Flowering period ²	Conservation Status ³	Potential for Occurrence within the Project Area ⁴					
				Alternative 1	Alternative 2	Alternative 2a	Alternative 3	Reconductoring	New 230kV Circuit
<i>Opuntia basilaris</i> var. <i>brachyclada</i> short-joint beavertail	Chaparral, Joshua tree woodland, Mojavean desert scrub, pinyon and juniper woodland; often on sandy soils or coarse, granitic loam. 1,395 – 5,910 feet	April – June	Fed: None CA: None CNPS: 1B.2 USFS: Sensitive BLM: SS	Segment D: Present. Species known within segment corridor. Suitable habitat exists in Joshua Tree Woodland, Chamise Chaparral, Mojave Creosote Bush Scrub, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.	Segment G: Present. Species known within segment corridor. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.	Segment G: Present. Species known within segment corridor. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment. Segment 2a: Likely. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.	Segment I: Present. Species known within segment corridor. Suitable habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is known within 10 miles of segment.	ANF: Present. Species known within segment corridor. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.	Segment J: Likely. Suitable habitat exists in Chamise Chaparral; elevation is appropriate; and species is known within 10 miles of segment.
<i>Oreonana vestita</i> woolly mountain-parsley	Lower montane coniferous forest, subalpine coniferous forest, upper montane coniferous forest; gravel or talus. 5,380 – 11,655 feet	May – September	Fed: None CA: None CNPS: 1B.3 USFS: Sensitive	Segment D: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment G: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment G: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. Segment 2a: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment I: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	ANF: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment J: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.
<i>Orobanche valida</i> ssp. <i>valida</i> Rock Creek broomrape	Chaparral, pinyon and juniper woodland; granitic soil. 4,100 – 6,560 feet	May – July	Fed: None CA: None CNPS: 1B.2 USFS: Sensitive	Segment D: Unlikely. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.	Segment G: Possible. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment G: Possible. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. Segment 2a: Possible. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment I: Possible. Suitable habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	ANF: Possible. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment J: Unlikely. Suitable habitat exists in Chamise Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.
<i>Pamassia cirrata</i> var. <i>cirrata</i> fringed grass-of-pamassus	Lower montane coniferous forest, meadows and seeps, upper montane coniferous forest; mesic soils, streamsid es, or calcareous habitat. 4,165 – 8,125 feet	August – September	Fed: None CA: None CNPS: 1B.3 USFS: Sensitive	Segment D: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment G: Absent. No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment.	Segment G: Absent. No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment. Segment 2a: Absent. No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment.	Segment I: Absent. No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment.	ANF: Absent. No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment.	Segment J: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.
<i>Perideridia gairdneri</i> ssp. <i>gairdneri</i> Gairdner's yampah	Broadleaved upland forest, chaparral, coastal prairie, valley and foothill grassland, vernal pools or vernal mesic soils. 0 – 1,200 feet	June – October	Fed: None CA: None CNPS: 4.2 USFS: Watch List	Segment D: Possible. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment G: Unlikely. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.	Segment G: Unlikely. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment. Segment 2a: Unlikely. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.	Segment I: Possible. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	ANF: Unlikely. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.	Segment J: Possible. Suitable habitat exists in Chamise Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
<i>Phacelia exilis</i> Transverse Range phacelia	Lower montane coniferous forest, meadows and seeps, upper montane coniferous forest; sandy or gravelly sites. 3,665 – 8,990 feet	May – August	Fed: None CA: None CNPS: 4.3 USFS: Sensitive	Segment D: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment G: Absent. No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment.	Segment G: Absent. No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment. Segment 2a: Absent. No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment.	Segment I: Absent. No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment.	ANF: Absent. No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment.	Segment J: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.
<i>Potentilla glandulosa</i> ssp. <i>ewanii</i> Ewan's cinquefoil	Lower montane coniferous forest near seeps and springs. 6,330 – 7,990 feet	June – July	Fed: None CA: None CNPS: 1B.3 USFS: Sensitive	Segment D: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment G: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment G: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. Segment 2a: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment I: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	ANF: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment J: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.
<i>Scutellaria bolanderi</i> ssp. <i>austromontana</i> southern mountains skullcap	Chaparral, cismontane woodland, lower montane coniferous forest; mesic soils. 1,400 – 6,660 feet	June – August	Fed: None CA: None CNPS: 1B.2 USFS: Sensitive	Segment D: Unlikely. Marginal habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment G: Unlikely. Marginal habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment G: Unlikely. Marginal habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. Segment 2a: Unlikely. Marginal habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment I: Unlikely. Marginal habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	ANF: Unlikely. Marginal habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment J: Unlikely. Marginal habitat exists in Chamise Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Species Name ¹	Habitat Requirements ²	Flowering period ²	Conservation Status ³	Potential for Occurrence within the Project Area ⁴					
				Alternative 1	Alternative 2	Alternative 2a	Alternative 3	Reconductoring	New 230kV Circuit
<i>Sidalcea hickmanii</i> ssp. <i>parishii</i> Parish's checkerbloom	Chaparral, montane coniferous forest; disturbed sites after fire, and grazed land. 3,280 – 8,200 feet	June – August	Fed: None CA: SR CNPS: 1B.2 USFS Sensitive	Segment D: Unlikely. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.	Segment G: Possible. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment G: Possible. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. Segment 2a: Possible. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment I: Possible. Suitable habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	ANF: Possible. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment J: Unlikely. Suitable habitat exists in Chamise Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.
<i>Sidotheca</i> (= <i>Oxytheca</i>) <i>caryophylloides</i> chickweed oxytheca	Lower montane coniferous forest; sandy habitat. 3,710 – 8,660 feet	July – September	Fed: None CA: None CNPS: 4.3 USFS: Sensitive	Segment D: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment G: Absent. No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment.	Segment G: Absent. No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment. Segment 2a: Absent. No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment.	Segment I: Absent. No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment.	ANF: Absent. No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment.	Segment J: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.
<i>Streptanthus bernardinus</i> Laguna Mountains jewel flower	Chaparral, lower montane coniferous forest. 2,200 – 8,325 feet	May – August	Fed: None CA: None CNPS: 4.3 USFS: Sensitive	Segment D: Unlikely. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment G: Possible. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment G: Possible. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. Segment 2a: Possible. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment I: Possible. Suitable habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	ANF: Possible. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment J: Unlikely. Suitable habitat exists in Chamise Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
<i>Streptanthus campestris</i> southern jewel flower	Chaparral, lower montane coniferous forest, pinyon and juniper woodland; rocky habitat. 2,950 – 7,660 feet	April – July	Fed: None CA: None CNPS: 1B.3 USFS: Sensitive	Segment D: Possible. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment G: Possible. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment G: Possible. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. Segment 2a: Possible. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment I: Possible. Suitable habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	ANF: Possible. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment J: Unlikely. Suitable habitat exists in Chamise Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.
<i>Symphotrichum</i> (= <i>Aster</i>) <i>defoliatum</i> San Bernardino aster	Cismontane woodland, coastal scrub, lower montane coniferous forest, meadows and seeps, marshes and swamps, valley and foothill grasslands. Found near ditches, streams, or springs. 10 – 7,000 feet	July – November	Fed: None CA: None CNPS: 1B.2 USFS: Sensitive	Segment D: Likely. Suitable habitat exists in California Annual Grassland, Mojave Creosote Bush Scrub, and Riversidian Sage Scrub; elevation is appropriate; and species is known within 10 miles of segment.	Segment G: Likely. Suitable habitat exists in California Annual Grassland and Riversidian Sage Scrub; elevation is appropriate; and species is known within 10 miles of segment.	Segment G: Likely. Suitable habitat exists in California Annual Grassland and Riversidian Sage Scrub; elevation is appropriate; and species is known within 10 miles of segment. Segment 2a: Possible. Suitable habitat exists in Interior Live Oak Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment I: Possible. Suitable habitat exists in California Annual Grassland and Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment.	ANF: Likely. Suitable habitat exists in California Annual Grassland and Riversidian Sage Scrub; elevation is appropriate; and species is known within 10 miles of segment.	Segment J: Possible. Suitable habitat exists in Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
<i>Syntrichopappus lemmonii</i> Lemmon's syntrichopappus	Chaparral, Joshua tree woodland, pinyon and juniper woodland; sandy or gravelly habitats. 1,640 – 6,000 feet	April – May	Fed: None CA: None CNPS: 4.3 USFS: Watch List	Segment D: Possible. Suitable habitat exists in Joshua Tree Woodland, Chamise Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment G: Possible. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment G: Possible. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. Segment 2a: Possible. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment I: Possible. Suitable habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	ANF: Possible. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.	Segment J: Possible. Suitable habitat exists in Chamise Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
<i>Thelypteris puberula</i> Sonoran maiden fern	Meadows and seeps. 197 – 2,001 feet	January – September	Fed: None CA: None CNPS: 2.2 USFS: Sensitive	Segment D: Absent. No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment.	Segment G: Absent. No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment.	Segment G: Absent. No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment. Segment 2a: Absent. No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.	Segment I: Absent. No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment.	ANF: Absent. No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment.	Segment J: Absent. No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment.

Notes:
1. Sources of scientific names and common names are: Hickman (1993), CNPS (2010) and CalFlora (2010).
2. Sources of habitat characteristics and flowering times are: CNDDB (CDFG 2010), and CNPS (2010).
3. Conservation status designations:
Federal status
FE = listed as Endangered under the federal Endangered Species Act
FT = listed as Threatened under the federal Endangered Species Act
FC = candidate for listing

State status
SE = listed as Endangered under the California Endangered Species Act
ST = listed as Threatened under the California Endangered Species Act
SR = listed as Rare under the California Native Plant Protection Act
CNPS designations
List 1B Plants rare, threatened, or endangered in California and elsewhere
List 2 Plants rare, threatened, or endangered in California, but more common elsewhere

- List 3 Plants for which more information is needed; a review list
- List 4 Plants of limited distribution; a watch list

CNPS threat extension codes

- .1 Seriously endangered in California
- .2 Fairly endangered in California
- .3 Not very endangered in California
- ? Threat status undetermined

Forest Service Sensitive Plants

- USFS Sensitive
- USFS Watch List

Bureau of Land Management

Sensitive species are those species that are designated by the State Director for special management consideration.

4. Potential to occur within the Project area is based on an analysis of species range and habitat preferences*, using the following criteria:

Is the species known to occur along the segment?
YES—PRESENT

Are the habitat requirements of the species associated with any of the mapped vegetation types for each segment?
Is the elevation range of the species within 500 feet of the elevation range of the segment?
Is the species known within 10 miles of segment?
YES to all three questions—LIKELY
YES to habitat question and one other question—POSSIBLE
YES to habitat question only—UNLIKELY
NO to habitat question—ABSENT

*Note that the “Habitat Requirements” header is based on Holland vegetation types and the “Potential for Occurrence within the Project Area” header was assessed using partially field-verified California GAP vegetation types. The *Index to NDDB/Holland Types* was used to translate between the Holland, NDDB, and GAP classification systems from the perspective to designate habitat as suitable when in doubt (Sawyer et al. 2009; <http://davisherb.ucdavis.edu/cnpsActiveServer/indices.html>).

Example. The “Habitat Requirements” for *Androsace elongata* ssp. *acuta* include chaparral, cismontane woodland, coastal scrub, meadows and seeps, pinyon and juniper woodland, and valley and foothill grassland. Each Holland type was looked up using the *Index to NDDB/Holland Types*. Chaparral corresponded to the chamise, scrub oak – birchleaf mountain-mahogany, and Interior live oak NDDB types, which correspond to the Chamise Chaparral, Scrub Oak Chaparral, and Interior Live Oak Chaparral GAP types (Southern Mixed Chaparral was also added to this because it fit best and wasn’t defined). The cismontane woodland Holland type also corresponded to Interior Live Oak NDDB type, which corresponded to the Interior Live Oak Chaparral GAP type. The coastal scrub Holland type corresponded to the brittlebush, California buckwheat, and California sagebrush NDDB types, which correspond to the Mojave Creosote Bush Scrub and Riversidian Sage Scrub GAP types. The valley and foothill grassland Holland type corresponded to the California annual grassland NDDB type, which corresponds to the California Annual Grassland GAP type. No NDDB types corresponded to the pinyon and juniper Holland type that also corresponded to any GAP types present in the Project area

TABLE 6. LISTED AND FOREST SERVICE SENSITIVE WILDLIFE SPECIES POTENTIALLY OCCURRING WITHIN THE ANGELES NATIONAL FOREST AND POTENTIAL TO AFFECT

Species	Scientific Name	Regulatory Status			Habitat Requirements	Alternative 1	Alternative 2	Alternative 2a	Alternative 3	Reconductoring	New Circuit
		Federal	State	Other		Segments A, C, D	Segments A, B, G	Segments A, B, G, 2a	Segments A, B, F, I	Segments A, B, G, K	Segment J
San Gabriel Mountain Slender Salamander	<i>Batrachoseps gabrieli</i>	FSS			Known only from the San Gabriel Mountains. Found under rocks, wood, fern fronds, and on soil at the base of talus slopes. Most active on the surface in winter and early spring.	A	A	A	A	A	A
Yellow-Blotched Salamander	<i>Ensatina eschscholtzii croceater</i>	FSS, BLM S		DFG SC	Forests and well-shaded canyons, as well as oak woodlands and old chaparral. Needs surface objects, such as logs, boards, and rocks. Also needs old rodent burrows or other underground retreats.	A	A	A	A	A	A
Foothill Yellow-Legged Frog	<i>Rana boylei</i>	FSS, BLM S		DFG SC	Partly-shaded, shallow streams and riffles with a rocky substrate in a variety of habitats. Needs at least some cobble-sized substrate for egg-laying.	A	A	A	A	A	A
Northern Goshawk	<i>Accipiter gentilis</i>	FSS, BLM S		DFG SC	In or near coniferous forests. Nests constructed on north slopes near water in red firs, lodgepole pines, Jeffrey pines, and aspens.	A	A	A	A	A	A
Swainson's Hawk	<i>Buteo swainsonii</i>	FSS	ST	USFW S BCC	Breeds in grasslands with scattered trees, juniper-sage flats, riparian areas, savannahs, agricultural areas, and ranches. Requires adjacent suitable foraging areas such as grasslands, or alfalfa or grain fields supporting rodent populations.	Po	Po	Po	Po	Po	A
Peregrine falcon	<i>Falco peregrinus</i>	Delisted, FS Watch list	SE	DFG FP, USFW S BCC	Near wetlands, lakes, rivers, or other water; on cliffs, banks, dunes, mounds, and man-made structures. Nest consists of a scrape on a depression or a ledge in an open site.	Po	Po	Po	U	Po	Po
Bald Eagle	<i>Haliaeetus leucocephalus</i>	Delisted, FSS	SE	DFG FP	Ocean shore, lake margins, and rivers for both nesting and wintering. Most nests are within one mile of water. Nests in large, old-growth or dominant live trees with open branches, especially Ponderosa pine. Roosts communally in winter.	Po	A	A	A	A	Po
California Spotted Owl	<i>Strix occidentalis occidentalis</i>	FSS, FS MIS, BLM S		DFG SC, USFW S BCC	Mixed conifer forest, often with an understory of black oaks and other deciduous hardwoods. Canopy closure >40%. Most often found in deep-shaded canyons, on north-facing slopes, and within 300 meters of water.	U	Po	Po	A	Po	Po

Species	Scientific Name	Regulatory Status			Habitat Requirements	Alternative 1	Alternative 2	Alternative 2a	Alternative 3	Reconductoring	New Circuit
		Federal	State	Other		Segments A, C, D	Segments A, B, G	Segments A, B, G, 2a	Segments A, B, F, I	Segments A, B, G, K	Segment J
Pallid Bat	<i>Antrozous pallidus</i>	FSS, BLM S		DFG SC, WBWG H	Deserts, grasslands, shrublands, woodlands and forests. Most common in open, dry habitats with rocky areas for roosting. Roosts must protect bats from high temperatures. This species is very sensitive to disturbance of roosting sites.	L	L	L	L	L	Po
Townsend's Big-Eared Bat	<i>Corynorhinus townsendii</i>	FSS, BLM S		DFG SC, WBWG H	Occurs throughout California in a variety of habitats, but most common in mesic sites. Roosts in the open, hanging from horizontal and vertical surfaces. Very sensitive to human disturbance.	L	L	L	L	L	Po
Western Red Bat	<i>Lasiurus blossevillei</i>	FSS		DFG SC, WBWG H	Roosts primarily in trees, two to 40 feet off the ground. Occurs from sea level up through mixed conifer forests. Prefers habitat edges and mosaics with trees that are protected from above and open below, with open areas for foraging.	L	L	L	L	L	L
San Gabriel Mountains Bighorn Sheep	<i>Ovis canadensis nelsoni</i>	FSS, BLM S			Widely distributed from the White Mountains in Mono County to the Chocolate Mountains in Imperial County. Open, rocky, steep areas with available water and herbaceous forage.	A	A	A	A	A	A
White-Eared Pocket Mouse	<i>Perognathus alticolus alticolus</i>	FSS, BLM S		DFG SC	Ponderosa and Jeffrey pine habitats, also in mixed chaparral and sagebrush habitats in the San Bernardino Mountains. Burrows are constructed in loose soil.	A	A	A	A	A	A
Tehachapi Pocket Mouse	<i>Perognathus alticolus inexpectatus</i>	FSS		DFG SC	Arid annual grassland and desert shrub communities, but also found in fallow grain fields and in Russian thistle. Burrows for cover and nesting. Aestivates and hibernates during extreme weather. Forages on open ground and under shrubs.	U	Po	Po	A	Po	A
Los Angeles Pocket Mouse	<i>Perognathus longimembris brevinasus</i>	FSS		DFG SC	Lower-elevation grasslands and coastal sage communities in and around the Los Angeles basin. Open ground with fine sandy soils; may not dig extensive burrows, hiding under weeds and dead leaves instead.	A	A	A	A	A	A
Arroyo Chub	<i>Gila orcutti</i>	FSS		DFG SC	Los Angeles basin south coastal streams; slow water stream sections with mud or sand bottoms, feeds heavily on aquatic vegetation and associated invertebrates.	U	Po	Po	U	Po	Po

Species	Scientific Name	Regulatory Status			Habitat Requirements	Alternative 1	Alternative 2	Alternative 2a	Alternative 3	Reconductoring	New Circuit
		Federal	State	Other		Segments A, C, D	Segments A, B, G	Segments A, B, G, 2a	Segments A, B, F, I	Segments A, B, G, K	Segment J
Santa Ana Speckled Dace	<i>Rhinichthys osculus</i>	FSS		DFG SC	Headwaters of the Santa Ana and the San Gabriel Rivers, may be extirpated from the Los Angeles River system. Requires permanent flowing streams with summer water temperatures of 17° – 20° C. Usually inhabits shallow cobble and gravel riffles.	A	A	A	A	A	A
California Legless Lizard	<i>Anniella pulchra</i>	FSS		DFG SC	Sandy or loose loamy soils under sparse vegetation. Soil moisture essential; this species prefers soils with high moisture content.	U	U	U	Po	U	Po
Southern Rubber Boa	<i>Charina bottae umbratica</i>	FSS	ST		Restricted to the San Bernardino and San Jacinto Mountains; found in a variety of montane forest habitats. Found in vicinity of streams or wet meadows, requires loose, moist soil for burrowing. Seeks cover in rotten logs.	A	A	A	A	A	A
Southwestern Pond Turtle	<i>Actinemys marmorata pallida</i>	FSS		DFG SC	Requires some slow-water habitat; also, shallow water with emergent vegetation. Nesting requires soils with a high clay or silt fraction to retain moisture. In California, this species is known from only two drainages on the desert slope in California: the Mojave River (San Bernardino County) and Andreas Canyon (Riverside County). From sea level to 1430 meters.	U	Pr	Pr	A	Pr	U
San Bernardino Ringneck Snake	<i>Diadophis punctatus modestus</i>	FSS			Most common in open, rocky areas, often in somewhat moist microhabitats near intermittent streams. Avoids moving through open or barren areas by restricting movements to areas of surface litter or herbaceous vegetation.	A	Po	Po	A	Po	A
San Bernardino Mountain Kingsnake	<i>Lampropeltis zonata parvirubra</i>	FSS		DFG SC	Big cone spruce and chaparral at lower elevations; black oak, incense cedar, Jeffrey pine, and Ponderosa pine at higher elevations. Well-lit canyons with rocky outcrops or rocky talus.	A	A	A	A	A	A
Coastal Rosy Boa	<i>Lichanura trivirgata roseofusca</i>	FSS, BLM S			Desert and chaparral from the coast to the Mojave and Colorado Deserts. Prefers moderate to dense vegetation and rocky cover. Habitats with a mix of brushy cover and rocky soil such as coastal canyons and hillsides, desert canyons, washes and mountains.	L	Pr	Pr	L	Pr	L

Species	Scientific Name	Regulatory Status			Habitat Requirements	Alternative 1	Alternative 2	Alternative 2a	Alternative 3	Reconductoring	New Circuit
		Federal	State	Other		Segments A, C, D	Segments A, B, G	Segments A, B, G, 2a	Segments A, B, F, I	Segments A, B, G, K	Segment J
Coast (San Diego) Horned Lizard	<i>Phrynosoma coronatum blainvillii</i>	FSS		DFG SC	Inhabits coastal sage scrub and chaparral in arid and semi-arid climate conditions. Prefers friable, rocky, or shallow sandy soils.	Pr	Pr	Pr	L	Pr	Pr
Two-Striped Garter Snake	<i>Thamnophis hammondi</i>	FSS, BLM S		DFG SC	Coastal California from vicinity of Salinas to Northwest Baja California. From sea level to approximately 7,000 feet elevation. Highly aquatic, found in or near permanent fresh water, often along streams with rocky beds and riparian vegetation.	U	L	L	Po	L	Po

Listing Status:
U.S. Fish and Wildlife Service (USFWS)
FE = listed as Endangered under the federal Endangered Species Act
FT = listed as Threatened under the federal Endangered Species Act
FS= listed as Sensitive under the federal Endangered Species Act
FPE= proposed listing under the federal Endangered Species Act
BCC = Bird of Conservation Concern
Delisted = Formerly listed as threatened or endangered under the federal Endangered Species Act
U.S. Forest Service (FS)
FSS = listed as Forest Service Sensitive
MIS = listed as Forest Service Management Indicator Species
Bureau of Land Management (BLM)
S = listed as BLM Sensitive
California Department of Fish and Game (CDFG)
SE = listed as Endangered under the California Endangered Species Act
ST = listed as Threatened under the California Endangered Species Act
SR=listed as Rare under the California Endangered Species Act
SC= listed as Species of Concern
FP = listed as Fully Protected under CDFG Code
Western Bat Working Group (WBWG)
H = listed as High Priority
Other
CA Fur-bearing Mammal = Listed under California Fur-bearing Mammal Statute § 4000 – 4012

Occurrence Code:
A = Absent: Species or sign not observed on the site, outside of the known range, and conditions unsuitable for occurrence
U = Unlikely: Species or sign not observed on the site, but conditions marginal for occurrence
Po = Possible: Species or sign not observed on the site, but conditions suitable for occurrence and/or an historical record exists in the vicinity
L = Likely: Species or sign not observed on the site, but reasonably certain to occur on the site based on conditions, species ranges, and recent records
Pr = Present: Species or sign of their presence recent

3.1 SPECIES ACCOUNTS

3.1.1 Plants

Protocol-level field surveys for special-status plants were conducted during spring and summer dates in 2008, 2009, and 2010. Plant species observed within the Project limits are listed in the Appendix. The list is not intended to be comprehensive and include all species present in the area, but only those observed during surveys. The area may support other species not presented in the observed species list that are annuals or only produce vegetative growth immediately after exposure to fire and would not have been growing at the time of the survey. Several sensitive species were observed near the Project area, including slender mariposa lily (*Calochortus clavatus* var. *gracilis*), and short-joint beavertail (*Opuntia basilaris* var. *brachyclada*). Table 5 contains a list of sensitive and listed plant species which could occur within the ANF along with their potentials to occur within the forested Project area. Plants which are determined to be likely to occur or are known within the Project area are described in further detail below with species accounts and direct, indirect, and cumulative impacts. Due to similarities in potential effects for plants within this particular Project area, potential effects are not repeated for each species and are instead grouped together in one section. Watch List species are not repeated below, as they are already listed in Table 5 above.

California Androsace

California androsace (*Androsace elongata* ssp. *acuta*) is a white-flowered annual herb in the Primrose Family (*Primulaceae*) that blooms during March to June (CNPS 2011). California androsace is associated with grassland, chaparral, coastal sage scrub, meadows and seeps, semi-desert shrub, pinyon-juniper woodland, and cismontane woodland at elevations of 490 to 3,940 feet (CNPS 2011). It typically occurs on dry grassy slopes and where vegetation cover is low and mesic conditions are present, such as on and adjacent to moss-covered soil or rock outcrops on north-facing slopes or along rocky washes (Hickman 1993, USFS 2005c). It is the only subspecies of California androsace known from California (USFS 2005c). California androsace is not federally or State listed. It is included on List 4.2 by the CNPS (CNPS 2011) and is included on the Forest Service watch list. Threats to California androsace may include grazing, trampling, fuels and vegetation management, invasive species (primarily cheatgrass), too-frequent fire, and recreational activities (USFS 2005c).

There are historical collections of California androsace from the Elizabeth Lake Canyon in the ANF; a recent collection from Liebre Mountain confirms that this species persists on the ANF (USFS 2005c).

Considering its geographic range and habitat preferences, California androsace has a possible potential to occur on all segments within the Project area. No locations for California androsace were found during 2008, 2009, or 2010 protocol-level surveys conducted for this Project on ANF lands (POWER 2008a, POWER 2010b, POWER 2010c). **Segments in which California androsace may occur are described below.**

Alternative 1 (Segment D): Possible. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Mojave Creosote Bush Scrub, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Alternatives 2, 2a (Segment G): Possible. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Alternative 2a (Segment 2a): Possible. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Alternative 3 (Segment I): Possible. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

ANF Reconductoring: Possible. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

New 230 kV Circuit (Segment J): Possible. Suitable habitat exists in Chamise Chaparral and Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment.

Kusche's Sandwort

Kusche's sandwort (*Arenaria macradenia* var. *kuschei*) is a white-flowered perennial herb in the Pink Family (*Caryophyllaceae*) that blooms from June to July. This species grows in sunny, rocky openings within a mosaic of chaparral and oak woodland at elevations of 4,000 to 5,600 feet (CNPS 2011). All occurrences are on decomposed granite and are found in areas of gentle relief (USFS 2005c). It is included on CNPS List 1B.1 (CNPS 2011). Threats to Kusche's sandwort occur from motorized recreational use and construction and maintenance of fuel breaks (USFS 2005c).

Kusche's sandwort appears to be endemic to the Liebre Mountain area. It was rediscovered in 1995 on Liebre Mountain in northern Los Angeles County, on ANF land. A 1997 survey of potential habitat on Liebre Mountain and adjacent areas located six new populations (USFS 2005c). The Consortium of California Herbaria (Jepson Online Interchange 2011) lists 12 specimens of this taxon, all from the Liebre Mountain area.

Based on its geographic range and habitat preferences, Kusche's sandwort has a possible potential to occur on Segments G, 2a, I, and the reconductoring area, and an unlikely potential to occur on Segments D or J in the Project area. Kusche's sandwort was not observed during 2008, 2009, or 2010 protocol-level surveys conducted for this Project on ANF lands (POWER 2008a, POWER 2010b, POWER 2010c). **Segments in which Kusche's sandwort may occur are described below.**

Segment D (Alternative 1): Unlikely. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.

Segment G (Alternatives 2, 2a): Possible. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Segment 2a (Alternative 2a): Possible. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Segment I (Alternative 3): Possible. Suitable habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

ANF Reconductoring: Possible. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Segment J (New 230 kV Circuit): Unlikely. Suitable habitat exists in Chamise Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.

San Gabriel Manzanita

San Gabriel manzanita (*Arctostaphylos glandulosa* ssp. *gabrielensis*) is an evergreen shrub with red berries in the Heath Family (*Ericaceae*) that blooms in March (CNPS 2011). This species is associated with rocky outcrops in chaparral at an elevation of 4,995 feet (Hickman 1993, CNPS 2011). It is included on CNPS List 1B.2 (CNPS 2011). San Gabriel manzanita is threatened by power line construction and is known only from one occurrence on Mill Creek Summit divide in the San Gabriel Mountains, on ANF land (CDFG 2011, CNPS 2011).

Based on its geographic range and habitat preferences, San Gabriel manzanita has an unlikely potential to occur on Segments D, G, 2a, I, the reconductoring area, or J. San Gabriel manzanita was not observed during 2008, 2009, or 2010 protocol-level surveys conducted for this Project on ANF lands (POWER 2008a, POWER 2010b, POWER 2010c). **Segments in which San Gabriel manzanita may occur are described below.**

Segment D (Alternative 1): Unlikely. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.

Segment G (Alternatives 2, 2a): Unlikely. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.

Segment 2a (Alternative 2a): Unlikely. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.

Segment I (Alternative 3): Unlikely. Suitable habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.

ANF Reconductoring: Unlikely. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.

Segment J (New 230 kV Circuit): Unlikely. Suitable habitat exists in Chamise Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.

Big Bear Valley Milk-vetch

Big Bear Valley milk-vetch (*Astragalus lentiginosus* var. *sierrae*) is a perennial herb in the Pea Family (*Fabaceae*). It blooms during April to August with whitish, pink-tinged flowers that develop into bladdery fruits (CNPS 2011). This species occurs in rocky meadows and pine woodlands and is associated with Mojavean desert scrub, meadows and seeps, pinyon and juniper woodland, and upper montane coniferous forest (Hickman 1993, CNPS 2011). It is included on CNPS List 1B.2 and is a Forest Service Sensitive species (CNPS 2011). It is known from 19 occurrences and occurs in the project county of Ventura (CDFG 2011).

There are no known populations of this species near the Project area. Based on its geographic range and habitat preferences, Big Bear Valley milk-vetch has an unlikely potential to occur on Segment D and is expected to be absent on all other segments. Big Bear Valley milk-vetch was not observed during botanical surveys conducted for this project in 2008, 2009, or 2010 on ANF lands (POWER 2008a, POWER 2010b, POWER 2010c). **Segments in which Big Bear Valley milk-vetch may occur are described below.**

Segment D (Alternative 1): Unlikely. Suitable habitat exists in Joshua Tree Woodland and Mojave Creosote Bush Scrub; elevation is not appropriate; and species is not known within 10 miles of segment.

Slender Mariposa Lily

Slender mariposa lily (*Calochortus clavatus* var. *gracilis*) is a bulbiferous herb in the Lily Family (*Liliaceae*). This species has yellow flowers that are reddish-brown at the base and it blooms during March to June (CNPS 2011). It occurs in shaded foothill canyons associated with chaparral, coastal scrub, and valley and foothill grassland, at elevations of 1,050 to 3,330 feet (Hickman 1993, CNPS 2011). There are 54 occurrences of this species rangewide, all in Los Angeles and Ventura Counties (CDFG 2011).

Slender mariposa lily is not federally or State listed, nor is it included on the list of California BLM Special Status Plants (BLM 2009). The CNPS places it on List 1B, meaning that it is considered rare and endangered (CNPS 2011). Its CNPS threat extension code is .2, indicating it is fairly endangered in California (CNPS 2011). In addition, it is a Forest Service sensitive species.

The *Revised Land and Resource Management Plan* for the ANF (USFS 2005c) states that most sites for this species on non-federal land are threatened by landfill expansion, residential development, sand and gravel mining, and off-highway vehicle activity, and that all *Calochortus* species are vulnerable to removal by collectors, so that rare species such as slender mariposa lily are vulnerable to extirpation as a result (USFS 2005c). The CNPS online Inventory (CNPS 2011) identifies development, mining and vehicles as threats to this species.

This species is known to occur on Project segments D, G, I, the reconductoring area, and J. In the 2008 and 2009 surveys conducted for this Project, slender mariposa lily was found in 62 locations on Segments D, G, and I in recently burned chaparral, coastal scrub, and grassland vegetation (POWER 2008a, POWER 2010b). In 2010 it was found in five additional locations on Segments D and J (POWER 2010c). A total of 19 individuals were found within disturbance areas on Alternative 1; 4,081 individuals within Alternative 2, 2a, and the reconductoring; 420 on Alternative 3; and 13 on the new 230 kV circuit. Based on range and habitat preferences, slender mariposa lily has a likely potential to occur on Segment 2a. **Segments in which slender mariposa lily occurs or may occur are described below.**

Segment D (Alternative 1): Present. Species known within segment corridor. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Mojave Creosote Bush Scrub, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; but species is known within 10 miles of segment.

Segment G (Alternatives 2, 2a): Present. Species known within segment corridor. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.

Segment 2a (Alternative 2a): Likely. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.

Segment I (Alternative 3): Present. Species known within segment corridor. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is known within 10 miles of segment.

ANF Reconductoring: Present. Species known within segment corridor. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.

Segment J (New 230 kV Circuit): Present. Species known within segment corridor. Suitable habitat exists in Chamise Chaparral and Riversidian Sage Scrub; elevation is appropriate; and species is known within 10 miles of segment.

Palmer's Mariposa Lily

Palmer's mariposa lily (*Calochortus palmeri* var. *palmeri*) is a bulb-forming herb in the Lily Family (*Liliaceae*). Habitat for Palmer's mariposa lily includes meadows, seeps, and vernal moist areas in chaparral, mixed conifer forest, and yellow pine forest at elevations of 3,300 to 7,840 feet (Hickman 1993, USFS 2005c, CNPS 2011). It has white to lavender flowers and blooms from April to July. Palmer's mariposa lily appears to have an "endurer" life history strategy for coping with wildfire, with most bulbs able to survive fire and to produce enough seed by the second year after the fire to increase reproductive output (USFS 2005c).

It is not federally or State listed, but is included in the CNPS Inventory (2011) on List 1B.2. In addition, it is considered a Sensitive species by the Forest Service. Potential threats include overgrazing, trampling, flooding, erosion, off-highway vehicles, and development projects (USFS 2005c). Palmer's mariposa lily is most vulnerable to impacts from grazing between April and August, when the plant is flowering and setting seed. All *Calochortus* species are vulnerable to removal by collectors, and rare species such as this are vulnerable to extirpation as a result (USFS 2005c).

Palmer's mariposa lily is endemic to Southern California. It has been documented in mountainous areas of San Luis Obispo, Santa Barbara, Ventura, Los Angeles, Kern, San Bernardino, and Riverside Counties (CNPS 2011). The CNDDB (CDFG 2011) lists 81 occurrences, of which most are in San Bernardino and Kern Counties, and four are from the ANF in Los Angeles County. According to the Forest Service (2005), occurrences in the ANF include Mystic Canyon and Little Rock Creek in the San Gabriel Mountains, and west of the Angeles Crest. None of these are in the vicinity of the Project area.

Based on range and habitat preferences, Palmer's mariposa lily has a likely potential to occur on Segment G; a possible potential to occur on Segments D, 2a, and I, and an unlikely potential to occur on Segment J. No individuals of this species were observed during 2008, 2009, or 2010 botanical surveys within ANF lands of the Project area (POWER 2008a, POWER 2010b, POWER 2010c). **Segments in which Palmer's mariposa lily may occur are described below.**

Segment D (Alternative 1): Possible. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Segment G (Alternatives 2, 2a): Likely. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.

Segment 2a (Alternative 2a): Possible. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Segment I (Alternative 3): Possible. Suitable habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

ANF Reconductoring: Likely. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.

Segment J (New 230 kV Circuit): Unlikely. Suitable habitat exists in Chamise Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.

Plummer's Mariposa Lily

Plummer's mariposa lily (*Calochortus plummerae*) is a pink-flowered bulb-forming herb in the Lily Family (*Liliaceae*). It grows on rocky, granitic soils, or on gravelly alluvium, usually in chaparral or coastal sage scrub habitats, and less often in grasslands, alluvial fan sage scrub, oak woodland, or Ponderosa pine woodland (USFS 2005c). It ranges from 325 to 5,580 feet in elevation but is less abundant at higher elevations (CNPS 2011). It is not federally or State listed, but is included on List 1B.2 of the CNPS Inventory (CNPS 2011). It blooms from May to July (CNPS 2011). Plummer's mariposa lily is threatened by development projects, trail construction and maintenance, fire suppression, habitat conversion, trampling, and sand and gravel mining (USFS 2005c), and possibly threatened by invasive non-native plants (CNPS 2011). All *Calochortus* species are vulnerable to removal by collectors, and rare species such as this are vulnerable to extirpation as a result (USFS 2005c).

Plummer's mariposa lily is endemic to Southern California. It has been documented in mountain ranges in Los Angeles, Orange, Riverside, San Bernardino and Ventura Counties. The CNDDB (CDFG 2011) lists 208 occurrences for this species. Most of these are in San Bernardino, Los Angeles, and Riverside Counties. Most occurrences within the ANF are from the San Gabriel Mountains (USFS 2005c).

Based on range and habitat preferences, Plummer's mariposa lily has a likely potential to occur on Segments D, G, I, the reconductoring area, and J, and a possible potential to occur on Segment 2a. Suitable habitat is found within chaparral and grassland vegetation, but there are no recent observations of this species in the vicinity of the Project area. No individuals of Plummer's mariposa lily were observed during 2008, 2009, or 2010 protocol-level surveys within ANF lands of the Project area (POWER 2008a, POWER 2010b, POWER 2010c). **Segments in which Plummer's mariposa lily may occur are described below.**

Segment D (Alternative 1): Likely. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Mojave Creosote Bush Scrub, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.

Segment G (Alternatives 2, 2a): Likely. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.

Segment 2a (Alternative 2a): Possible. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Segment I (Alternative 3): Likely. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is known within 10 miles of segment.

ANF Reconductoring: Likely. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.

Segment J (New 230 kV Circuit): Likely. Suitable habitat exists in Chamise Chaparral and Riversidian Sage Scrub; elevation is appropriate; and species is known within 10 miles of segment.

Alkali Mariposa Lily

Alkali mariposa lily (*Calochortus striatus*) is a pink-flowered bulb-forming herb in the Lily Family (*Liliaceae*). It blooms from April to June (CNPS 2011). It grows in seasonally moist alkaline habitats such as alkali meadows, ephemeral washes, vernal moist depressions, and at seeps within saltbush and Mojave Creosote Bush scrub, in calcareous sandy soil, from 230 to 5,230 feet in elevation (Hickman 1993, USFS 2005c, CNPS 2011). Alkali mariposa lily has not been found in soils with surface salts, or in wetter areas with permanent standing surface water. The bulb remains dormant and does not sprout in dry years (USFS 2005c). It is not federally or state listed, but is included on List 1B.2 of the CNPS Inventory (CNPS 2011), and is considered a Sensitive species by the Forest Service and BLM.

Potential threats to alkali mariposa lily include grazing, development, altered hydrology, trampling, road construction and collecting (CNPS 2011). All *Calochortus* species are vulnerable to removal by collectors, and are vulnerable to extirpation as a result (USFS 2005c). Alkali mariposa lily is associated with mesic soils in the desert, and is therefore highly vulnerable to habitat loss and degradation resulting from water diversions that affect hydrology (USFS 2005c).

Alkali mariposa lily is restricted to mesic alkaline sites in Southern California, where it is known from Tulare, Kern, Los Angeles, and San Bernardino Counties (CNPS 2011). It also occurs in southern Nevada. In California it has been documented in the southern Sierra Nevada, the western, central, and southern Mojave Desert, the north base of the San Bernardino Mountains, and the southern San Joaquin Valley. The CNDDB (CDFG 2011) lists 93 occurrences for alkali mariposa lily. There are no confirmed records of alkali mariposa lily on National Forest System lands; a record from Pinyon Flats in the ANF is likely a misidentification (USFS 2005c).

Based on range and habitat preferences, alkali mariposa lily has a likely potential to occur on Segments G, 2a, I, and the reductoring area, and a possible potential to occur on Segments D and J. No individuals of this species were observed during 2008, 2009, or 2010 protocol-level surveys conducted for this Project on ANF lands (POWER 2008a, POWER 2010b, POWER 2010c). **Segments in which alkali mariposa lily may occur are described below.**

Segment D (Alternative 1): Possible. Suitable habitat exists in Joshua Tree Woodland, Chamise Chaparral, Mojave Creosote Bush Scrub, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Segment G (Alternatives 2, 2a): Likely. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.

Segment 2a (Alternative 2a): Likely. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.

Segment I (Alternative 3): Likely. Suitable habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is known within 10 miles of segment.

ANF Reconductoring: Likely. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.

Segment J (New 230 kV Circuit): Possible. Suitable habitat exists in Chamise Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Late Flowered Mariposa Lily

Late-flowered mariposa lily (*Calochortus weedii* var. *vestus*) is a pink-flowered bulb-forming herb in the Lily Family (*Liliaceae*). It grows in open, dry, rocky sites in chaparral and cismontane and riparian woodlands, from 880 to 6,250 feet in elevation (CNPS 2011). It is often found on serpentine substrates, but may also occur on sandstone, siltstone and shale substrates (USFS 2005c). Key habitat elements include rocky, open sites with reduced competition from other plants, suggesting a low tolerance of disturbance or a lack of ability to compete with other plants (USFS 2005c). Late-flowered mariposa lily appears to cope with wildfire through an "endurer" life history strategy; most bulbs survive fire, and the plants produce enough seed in the second year following fire to result in an increase in reproductive output (USFS 2005c).

Late-flowered mariposa lily is not federally or State listed. It is on List 1B.2 of the CNPS Inventory (CNPS 2011), and is considered Sensitive by the Forest Service. It flowers from June to August (CNPS 2011). Potential threats include risk from road and fuel break maintenance, fire suppression, grazing, and housing development on private lands (USFS 2005c, CNPS 2011). Late-flowered mariposa lily is endemic to coastal Southern California. Locations have been documented in Kern, Monterey, San Luis Obispo, Santa Barbara, and Ventura Counties (CNPS 2011). There are no documented locations for Los Angeles County or the ANF (CNPS 2011, CDFG 2011).

Based on range and habitat preferences, late-flowered mariposa lily has a possible potential to occur on Segments D, G, 2a, I, the reconductoring area, and J. However, there are no known locations for this species within Los Angeles County or the ANF. This species was not found during the 2008, 2009 or 2010 protocol-level surveys conducted for this Project (POWER 2008a, POWER 2010b, POWER 2010c).

Segments in which late-flowered mariposa lily may occur are described below.

Segment D (Alternative 1): Possible. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Segment G (Alternatives 2, 2a): Possible. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Segment 2a (Alternative 2a): Possible. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Segment I (Alternative 3): Possible. Suitable habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

ANF Reconductoring: Possible. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Segment J (New 230 kV Circuit): Possible. Suitable habitat exists in Chamise Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

White Pygmy Poppy

White pygmy poppy (*Canbya candida*) is a diminutive annual herb in the Poppy Family (*Papaveraceae*) that blooms from March through May (occasionally June). It is the only species of the genus *Canbya* in California and is easily distinguished from other members of the Poppy Family by its tiny white radial flowers with six petals, six to nine yellow anthers, and basal, entire, linear leaves (Hickman 1993). White pygmy poppy is a CNPS List 4.2, Forest Service Sensitive, and BLM Plant of Interest (USFS 2007, CNPS 2011). White pygmy poppy is threatened by development, vehicles, grazing, mining, and non-native plants (CNPS 2011).

White pygmy poppy occurs in the western Mojave Desert adjacent to the Sierra Nevada Mountains in Imperial, Kern, Inyo, San Bernardino and Los Angeles Counties. White pygmy poppy may be found in sandy, gravelly or granitic soils in Joshua Tree Woodland, Mojavean desert Scrub, and Pinyon-Juniper Woodland from 1,970 to 4,790 feet (Hickman 1993, CNPS 2011). The nearest known occurrence is in the San Fernando USGS Quadrangle near the interchange of Interstates 5 and 210 (CalFlora 2011). White pygmy poppy was not observed within the survey area and is not known to occur in the Project vicinity.

Based on range and habitat preferences, white pygmy poppy has a possible potential to occur on Segments D and I. This species was not found during the 2008, 2009, or 2010 protocol-level surveys conducted for this Project (POWER 2008a, POWER 2010b, POWER 2010c). It is expected to be absent from all other forested parts of the Project area. **White pygmy poppy may occur on the following segments:**

Segment D (Alternative 1): Possible. Suitable habitat exists in Joshua Tree Woodland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment.

Segment I (Alternative 3): Possible. While suitable habitat is not known on this segment according to GAP data, it is likely that small patches of habitat may be present in the northern portions; elevation is appropriate; and species is known within 10 miles of segment.

Mojave Indian Paintbrush

Mojave Indian paintbrush (*Castilleja plagiotoma*) is a hemiparasitic perennial herb in the Figwort Family (*Scrophulariaceae*). This species has pale yellow, white woolly flowers and blooms during April to June (CNPS 2011). It is associated with Great Basin scrub, Joshua tree woodland, lower montane coniferous forest, and pinyon and juniper woodland at elevations of 980 to 8,200 feet (CNPS 2011). It is on CNPS List 4.3 and a Forest Service Sensitive species and is threatened by recreational and road activities (CNPS 2011).

Based on range and habitat preferences, Mojave Indian paintbrush has a possible potential to occur on Segments D and I, but is not expected to occur on any other forested portions of the Project. This species was not found during the 2008, 2009, or 2010 protocol-level surveys conducted for this Project (POWER 2008a, POWER 2010b, POWER 2010c). **Mojave Indian paintbrush may occur on the following segments:**

Segment D (Alternative 1): Possible. Suitable habitat exists in Joshua Tree Woodland and Rabbitbrush Scrub; elevation is appropriate; and species is not known within 10 miles of segment.

Segment I (Alternative 3): Possible. While suitable habitat is not known on this segment according to GAP data, it is likely that small patches of habitat may be present in the northern portions; elevation is appropriate; and species is known within 10 miles of segment.

Parry's Spineflower

Parry's spineflower (*Chorizanthe parryi* var. *parryi*) is a white-flowered annual herb in the Buckwheat Family (*Polygonaceae*) that flowers from April to June (CNPS 2011). It occurs in sandy places associated with coastal sage scrub, chaparral, alluvial wash scrub, cismontane woodland, and the ecotone between chaparral and oak woodland, from 100 to 4,000 feet in elevation (Hickman 1993, CNPS 2011, USFS 2005c). Parry's spineflower is not federally or State listed, but is included on List 1B.1 on the CNPS online Inventory (CNPS 2011) and is a Forest Service Sensitive species. Parry's spineflower is threatened by altered hydrologic regimes, development, mining, and vehicles (CNPS 2011).

Parry's spineflower is endemic to Southern California, where it has been documented in alluvial fans and terraces in San Bernardino, Riverside, Los Angeles, and Orange Counties (CNPS 2011, CDFG 2011). The CNDDB (CDFG 2011) lists 94 occurrences; most of these are from Riverside and San Bernardino Counties. There are no documented occurrences from ANF lands except for one uncertain identification from 1902 (CDFG 2011).

Based on range and habitat preferences, Parry's spineflower has a likely potential to occur on Segments D, G, 2a, I, the reconductoring area, and J. Some possibly suitable habitat occurs in scrub and chaparral within the Project area. However, there are no known locations within the vicinity of the Project area. No individuals of this species were found during 2008, 2009, or 2010 protocol-level surveys conducted for this Project on ANF lands (POWER 2008a, POWER 2010b, POWER 2010c). **Segments in which Parry's spineflower may occur are described below.**

Segment D (Alternative 1): Likely. Suitable habitat exists in Chamise Chaparral, Mojave Creosote Bush Scrub, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.

Segment G (Alternatives 2, 2a): Likely. Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.

Segment 2a (Alternative 2a): Likely. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.

Segment I (Alternative 3): Likely. Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is known within 10 miles of segment.

ANF Reconductoring: Likely. Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.

Segment J (New 230 kV Circuit): Likely. Suitable habitat exists in Chamise Chaparral and Riversidian Sage Scrub; elevation is appropriate; and species is known within 10 miles of segment.

Mojave Tarplant

Mojave tarplant (*Deinandra mohavensis*) is an annual herb in the Sunflower Family (*Asteraceae*) that blooms from June to January (CNPS 2011). It is distinguished from other members of the genus *Deinandra* by its lack of spines on the leaves, yellow anthers, lanceolate upper leaves and whitish stems. Other distinct taxonomic features include five ray flowers, six disk flowers, linear phyllaries, a dense inflorescence and sub-entire basal leaves (Hickman 1993). Mojave tarplant is State listed as endangered.

It is a CNPS List 1B.3, Forest Service Sensitive, and BLM SS species (USFS 2007, CNPS 2011). Mojave tarplant occurs between 2,100 and 5,250 feet in elevation and is threatened by development, grazing, hydrological alterations, recreational activities, road maintenance, and vehicles (CNPS 2011). Mojave tarplant is endemic to Kern, Riverside, San Bernardino and San Diego Counties in chaparral and coastal and riparian scrub (CNPS 2011). According to CalFlora (2011), there are 155 records of Mojave tarplant,

while CNDDDB (CDFG 2011) lists 66 occurrences with none in the ANF. Populations nearest to the Project area occur in Kern County between Lancaster and Ridgecrest and in San Bernardino County near Apple Valley.

Based on range and habitat preferences, Mojave tarplant has a likely potential to occur on Segment G and the reconductoring area; a possible potential to occur on Segments D, 2a, I, and J. No individuals of Mojave tarplant were observed during 2008, 2009, or 2010 surveys conducted for this Project on federal lands (POWER 2008a, POWER 2010b, POWER 2010c). **Segments in which Mojave tarplant may occur are described below.**

Segment D (Alternative 1): Possible. Suitable habitat exists in Chamise Chaparral, Mojave Creosote Bush Scrub, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Segment G (Alternatives 2, 2a): Likely. Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.

Segment 2a (Alternative 2a): Possible. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Segment I (Alternative 3): Possible. Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

ANF Reconductoring: Likely. Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.

Segment J (New 230 kV Circuit): Possible. Suitable habitat exists in Chamise Chaparral and Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment.

San Gabriel River Dudleya

San Gabriel River dudleya (*Dudleya cymosa* ssp. *crebrifolia*) is a perennial herb in the Stonecrop Family (*Crassulaceae*). It has mustard yellow flowers and blooms during April to July (CNPS 2011). It occurs on granitic slopes and is associated with chaparral habitats at elevations of 900 to 1,500 feet (Hickman 1993, CNPS 2011). It is a CNPS List 1B.2 and Forest Service Sensitive species. This species is threatened by mining and is only known from one occurrence near the San Gabriel River in Los Angeles County (CDFG 2011, CNPS 2011).

Based on current range and habitat preferences, San Gabriel River dudleya is unlikely to occur on all components. No individuals of San Gabriel River dudleya were located during 2008, 2009, or 2010 protocol-level surveys conducted for this Project on ANF lands (POWER 2008a, POWER 2010b, POWER 2010c). **Segments in which San Gabriel River dudleya may occur are described below.**

Segment D (Alternative 1): Unlikely. Marginal habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Segment G (Alternatives 2, 2a): Unlikely. Marginal habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Segment 2a (Alternative 2a): Unlikely. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.

Segment I (Alternative 3): Unlikely. Marginal habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

ANF Reconductoring: Unlikely. Marginal habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Segment J (New 230 kV Circuit): Unlikely. Marginal habitat exists in Chamise Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

San Gabriel Mountains Dudleya

San Gabriel Mountains dudleya (*Dudleya densiflora*) is a white- or pink-flowered perennial herb in the Stonecrop Family (*Crassulaceae*) that blooms during March to July. It occurs at elevations from 800 to 2,000 feet on steep, granitic cliff and canyon walls and is associated with chaparral, coastal scrub, lower montane coniferous forest, and cismontane woodland (Hickman 1993, CNPS 2011). It is a CNPS List 1B.1 and Forest Service Sensitive species that is threatened by mining, development, and possible horticultural collecting (CNPS 2011). There are six occurrences in California, all in Los Angeles County (CDFG 2011).

Based on current range and habitat preferences, San Gabriel Mountains dudleya has a possible potential to occur on Segments D, G, the reconductoring area, and J, and an unlikely potential to occur on Segment 2a. No individuals of San Gabriel Mountains dudleya were located during 2008, 2009, or 2010 protocol-level surveys conducted for this Project on ANF lands (POWER 2008a, POWER 2010b, POWER 2010c). **Segments in which San Gabriel Mountains dudleya may occur are described below.**

Segment D (Alternative 1): Possible. Suitable habitat exists in Chamise Chaparral, Mojave Creosote Bush Scrub, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Segment G (Alternatives 2, 2a): Possible. Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Segment 2a (Alternative 2a): Unlikely. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.

Segment I (Alternative 3): Possible. Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

ANF Reconductoring: Possible. Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Segment J (New 230 kV Circuit): Possible. Suitable habitat exists in Chamise Chaparral and Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment.

Many-stemmed Dudleya

Many-stemmed dudleya (*Dudleya multicaulis*) is a yellow-flowered succulent perennial herb in the Stonecrop Family (*Crassulaceae*) that blooms from April to July (CNPS 2011). It is associated with open sites within chaparral, coastal scrub, and valley and foothill grassland, in dry stony soils, often with high clay content, from 45 to 2,590 feet in elevation (Hickman 1993, CNPS 2011, USFS 2005c). Many-stemmed dudleya is not federally or State listed, but is on List 1B.2 of the CNPS online Inventory (CNPS 2011) and is a Forest Service Sensitive species. Many-stemmed dudleya is seriously threatened by development, road construction and maintenance, fire suppression, invasive non-native plants, mining, grazing, and recreation (CNPS 2011).

Many-stemmed dudleya is endemic to the coastal and foothill areas of Los Angeles, Orange, western San Bernardino, western Riverside, and San Diego Counties. The CNDDDB (CDFG 2011) lists 116 occurrences for this species; most of these are on private land in Orange County. There are no known localities on the ANF (USFS 2005c).

Based on current range and habitat preferences, many-stemmed dudleya has a likely potential to occur on Segment G and the reconductoring area, and a possible potential to occur on Segments D, 2a, I, and J. Marginally suitable habitat may occur within chaparral habitat within the Project area; however, there are no known locations within the vicinity of the Project area. No individuals of many-stemmed dudleya were observed during 2008, 2009, or 2010 protocol-level surveys conducted for this Project on ANF lands (POWER 2008a, POWER 2010b, POWER 2010c). **Segments in which many-stemmed dudleya may occur are described below.**

Segment D (Alternative 1): Possible. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Mojave Creosote Bush Scrub, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Segment G (Alternatives 2, 2a): Likely. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.

Segment 2a (Alternative 2a): Possible. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Segment I (Alternative 3): Possible. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

ANF Reconductoring: Likely. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.

Segment J (New 230 kV Circuit): Possible. Suitable habitat exists in Chamise Chaparral and Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment.

San Gabriel Bedstraw

San Gabriel bedstraw (*Galium grande*) is a yellow-flowered sprawling semi-woody perennial in the Bedstraw Family (*Rubiaceae*) that blooms from January to July (CNPS 2011). It grows in chaparral, open broad-leaved upland forests, cismontane woodlands, and lower montane conifer forests at elevations of 1,400 to 4,920 feet (CNPS 2011). It is not federally or State listed. The CNPS online Inventory includes it on List 1B.2 (CNPS 2011), and the Forest Service considers it to be a Sensitive species. This species is possibly threatened by trail and road use and maintenance, firebreak maintenance, transmission line construction, and recreation (CNPS 2011, USFS 2005c).

San Gabriel bedstraw is endemic to Los Angeles County in the San Gabriel Mountains, and possibly the Liebre Mountains. Eight of the nine recorded occurrences are on the ANF (CDFG 2011); none of these are in the vicinity of the Project area. The closest occurrence to the Project is approximately 3.5 miles west northeast of Castaic Lake (CDFG 2011). ANF has adopted species management guidelines for San Gabriel bedstraw (CNPS 2011).

Based on current range and habitat preferences, San Gabriel bedstraw has a likely potential to occur on Segments D, G, 2a, I, the reconductoring area, and J. No known locations are found within the vicinity of the Project area. This species was not found during the 2008, 2009, or 2010 protocol-level surveys conducted for this Project on ANF lands (POWER 2008a, POWER 2010b, POWER 2010c). **Segments in which San Gabriel bedstraw may occur are described below.**

Segment D (Alternative 1): Likely. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.

Segment G (Alternatives 2, 2a): Likely. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.

Segment 2a (Alternative 2a): Likely. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.

Segment I (Alternative 3): Likely. Suitable habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is known within 10 miles of segment.

ANF Reconductoring: Likely. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.

Segment J (New 230 kV Circuit): Likely. Suitable habitat exists in Chamise Chaparral; elevation is appropriate; and species is known within 10 miles of segment.

Urn-flowered Alumroot

Urn-flowered alumroot (*Heuchera elegans*) is a rhizomatous herb in the Saxifrage Family (Saxifragaceae). It generally has white flowers and blooms during May to August (CNPS 2011). It occurs in rocky areas in cismontane woodland, lower montane coniferous forest, montane riparian forest, and upper montane coniferous forest at elevations of 3,790 to 8,825 feet (Hickman 1993, CNPS 2011). It is a CNPS List 4.3 and Forest Service Sensitive species and is threatened by foot traffic (CNPS 2011).

Based on current range and habitat preferences, urn-flowered alumroot has a possible potential to occur on Segments 2a and I. This species was not found during the 2008, 2009, or 2010 protocol level surveys conducted for this Project (POWER 2008a, POWER 2010b, POWER 2010c). **Segments in which urn-flowered alumroot may occur are described below.**

Segment 2a (Alternative 2a): Possible. Suitable habitat exists in Interior Live Oak Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Segment I (Alternative 3): Possible. Suitable habitat exists in Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Mesa Horkelia

Mesa horkelia (*Horkelia cuneata* ssp. *puberula*) is a perennial herb in the Rose Family (Rosaceae) that flowers during February to July (September is unusual). It occurs in dry, sandy, or gravelly maritime chaparral, coastal scrub, and cismontane woodland, at elevations of 230 to 2,660 feet (Hickman 1993, CNPS 2011). It is a CNPS List 1B.1 and Forest Service Sensitive species that is possible threatened by habitat conversion (CNPS 2011). There are 58 occurrences in California, 26 which are in Los Angeles and Ventura Counties (CDFG 2011, CNPS 2011).

Based on current range and habitat preferences, urn-flowered alumroot has a possible potential to occur on Segments 2a and I. This species was not found during the 2008, 2009, or 2010 protocol level surveys conducted for this Project (POWER 2008a, POWER 2010b, POWER 2010c). **Segments in which urn-flowered alumroot may occur are described below.**

Segment D (Alternative 1): Possible. Suitable habitat exists in Chamise Chaparral, Mojave Creosote Bush Scrub, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Segment G (Alternatives 2, 2a): Possible. Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Segment 2a (Alternative 2a): Possible. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Segment I (Alternatives 3): Possible. Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

ANF Reconductoring: Possible. Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Segment J (New 230 kV Circuit): Possible. Suitable habitat exists in Chamise Chaparral and Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment.

California Satintail

California satintail (*Imperata brevifolia*) is a rhizomatous perennial grass in the Grass Family (*Poaceae*) that blooms from September to May (CNPS 2011). It occurs at wet springs, meadows, streamsides, and floodplains and is associated with mesic sites within chaparral, coastal scrub, Mojavean desert scrub, meadows and seeps (often alkaline), and riparian scrub, from 0 to 1,640 feet (Hickman 1993, CNPS 2011). It is not federally or State listed. The CNPS online Inventory includes it on List 2.1 (CNPS 2011), and the Forest Service tracks it as a Sensitive species. This species is threatened by development and agriculture (CNPS 2011).

Within California, this species is known from Butte, Fresno, Imperial, Inyo, Kern, Lake, Los Angeles, Orange, Riverside, San Bernardino, Tehama, Tulare, and Ventura Counties (CNPS 2011). The CNDDB (CDFG 2011) lists 29 occurrences for California satintail, including two within the ANF, but there are no known locations within the vicinity of the Project area.

Based on current range and habitat preferences, California satintail has a possible potential to occur on Segments D, G, I, the reconductoring area, and J, and an unlikely potential to occur on Segment 2a. The Project area has very few mesic sites, and no locations are known in the vicinity. No individuals of this species were found during 2008, 2009, or 2010 protocol-level surveys within the Project area on ANF lands (POWER 2008a, POWER 2010b, POWER 2010c). **Segments in which California satintail may occur are described below.**

Segment D (Alternative 1): Possible. Suitable habitat exists in Chamise Chaparral, Joshua Tree Woodland Mojave Creosote Bush Scrub, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Segment G (Alternatives 2, 2a): Possible. Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Segment 2a (Alternatives 2a): Unlikely. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.

Segment I (Alternative 3): Possible. Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

ANF Reconductoring: Possible. Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Segment J (New 230 kV Circuit): Possible. Suitable habitat exists in Chamise Chaparral and Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment.

Southern California Black Walnut

Southern California black walnut (*Juglans californica*) is a tall deciduous tree in the Walnut Family (*Juglandaceae*) that blooms from March through August (CNPS 2011). Southern California black walnut

occurs along slopes, canyons, and valleys within chaparral, coastal scrub, and cismontane woodlands at elevations of 160 to 2,950 feet (Hickman 1993, CNPS 2011). It typically occupies mesic areas such as riparian corridors, floodplains, and north-facing slopes, and prefers soils with high clay content (USFS 2005c). It is not federally or State listed.

The CNPS online Inventory places it on List 4.2 (CNPS 2011), and the Forest Service includes it on their Watch List. Southern California black walnut is threatened by urbanization, grazing, invasive non-native plants, and possibly by a lack of natural regeneration and hybridization with non-native walnut species (CNPS 2011). Southern California black walnut is endemic to Southern California, where it is known from Santa Barbara, Ventura, Los Angeles, Orange, San Bernardino, Riverside, and San Diego Counties (CNPS 2011). Its distribution is fragmented. Large stands are present in Ventura, Los Angeles, and northern Orange Counties (USFS 2005c). On the ANF, the species occurs in Pacoima Canyon in the San Gabriel Mountains (USFS 2005c).

Based on current range and habitat preferences, Southern California black walnut has a possible potential to occur on Segments D, G, 2a, I, the reconductoring area, and J. Marginally suitable habitat is present, but there are no known locations within the vicinity of the Project area. No individuals of Southern California black walnut were found during 2008, 2009, or 2010 protocol-level surveys conducted for this Project on ANF lands (POWER 2008a, POWER 2010b, POWER 2010c). **Segments in which Southern California black walnut may occur are described below.**

Segment D (Alternative 1): Possible. Suitable habitat exists in Chamise Chaparral, Mojave Creosote Bush Scrub, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Segment G (Alternatives 2, 2a): Possible. Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Segment 2a (Alternative 2a): Possible. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Segment I (Alternative 3): Possible. Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

ANF Reconductoring: Possible. Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Segment J (New 230 kV Circuit): Possible. Suitable habitat exists in Chamise Chaparral and Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment.

Fragrant Pitcher Sage

Fragrant pitcher sage (*Lepechinia fragrans*) is a pink-flowered shrub in the Mint Family (*Lamiaceae*) that flowers between March and October (CNPS 2011). It is known from chaparral habitat in canyons, between 70 and 4,360 feet in elevation (Hickman 1993, CNPS 2011). Fragrant pitcher sage is not state or federally listed. It is included on List 4.2 of the CNPS online Inventory (CNPS 2011), and the Forest Service Sensitive species list. Potential threats to the species include urbanization, fire management, and loss of habitat due to development (CNPS 2011).

Fragrant pitcher sage is endemic to Southern California, where it is known from the Santa Monica and San Gabriel Mountains, the Channel Islands, and Santa Barbara, Los Angeles, San Bernardino, and possibly Ventura Counties (CNPS 2011, CalFlora 2011). The Consortium of California Herbaria (Jepson Online Interchange 2011) lists 135 specimens of this species; most of these are from the Channel Islands.

It is unclear whether any of these specimens have been collected within ANF lands. The Forest Service notes that there are about 12 occurrences of fragrant pitcher sage on or near the Angeles and San Bernardino National Forests (USFS 2005c).

Based on current range and habitat preferences, fragrant pitcher sage has a possible potential to occur on Segments 2a and I and an unlikely potential to occur on Segments D, G, the reconductoring area, and J. Suitable habitat is present, but there are no known locations within the vicinity of the Project area. No individuals of fragrant pitcher sage were found during 2008, 2009, or 2010 protocol-level surveys conducted for this Project on ANF lands (POWER 2008a, POWER 2010b, POWER 2010c). **Segments in which fragrant pitcher sage may occur are described below.**

Segment D (Alternative 1): Unlikely. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Segment G (Alternatives 2, 2a): Unlikely. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Segment 2a (Alternative 2a): Possible. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Segment I (Alternative 3): Possible. Suitable habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

ANF Reconductoring: Unlikely. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Segment J (New 230 kV Circuit): Unlikely. Suitable habitat exists in Chamise Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Ross' Pitcher Sage

Ross' pitcher sage (*Lepechinia rossii*) is a perennial shrub in the Mint Family (*Lamiaceae*) that blooms from May to September. Currently it is only known from chaparral, from 1,000 to 2,590 feet in elevation (CNPS 2011). It is distinguished from other members of the subgenus *Calycinae* by geniculate inflorescence axes, which are bent at 60 to 90° angles relative to the subtending stems. It is also distinguished by the presence of large, foliaceous inflorescence bracts which are generally equaling or exceeding their adjacent flowers in length, and little reduced distally (Boyd and Mistretta 2006).

Ross' pitcher sage is not federally or State listed. It is included on CNPS List 1B, meaning that it is rare and endangered throughout its range (CNPS 2011). The CNPS threat extension of .2 means that it fairly endangered in California. The species is considered Sensitive by the Forest Service. As this species is known to be endemic to Los Angeles and Ventura counties, and known from only three locations in the Western Transverse Range (CDFG 2011), its existence is potentially threatened by logging and mining activities (CNPS 2011). Other conservation concerns include habitat degradation by off-highway vehicle activity, power line maintenance, petroleum exploration and extraction, and anthropogenic changes in fire frequency (Boyd and Mistretta 2006).

Based on current range and habitat preferences, Ross' pitcher sage has a likely potential to occur on segments D, G, 2a, I, the reconductoring area, and J. As of the species description in 2006, two populations had been documented, one in the Liebre Mountains (Los Angeles County) and one in the Topatopa Mountains (Ventura County), both occurring in chaparral on public lands administered by the Forest Service. Ross' pitcher sage was mapped at 13 locations in chaparral habitat along the Midway-Vincent Transmission Line corridor, which is no longer part of the proposed Project (POWER 2010b). The Midway-Vincent Segment was an alternative considered and eliminated. Approximately 137 individual plants were observed. Ross' pitcher sage was not detected in any other locations during 2008,

2009, or 2010 protocol-level surveys conducted for this Project on ANF lands (POWER 2008a, POWER 2010b, POWER 2010c). **Segments in which Ross' pitcher sage may occur are described below.**

Segment D (Alternative 1): Likely. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.

Segment G (Alternatives 2, 2a): Likely. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.

Segment 2a (Alternative 2a): Likely. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.

Segment I (Alternative 3): Likely. Suitable habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is known within 10 miles of segment.

ANF Reconductoring: Likely. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.

Segment J (New 230 kV Circuit): Likely. Suitable habitat exists in Chamise Chaparral; elevation is appropriate; and species is known within 10 miles of segment.

Ocellated Lily

Ocellated lily (*Lilium humboldtii* ssp. *ocellatum*) is an orange-flowered bulb-forming monocot in the Lily Family (*Liliaceae*) that blooms from March to July, and uncommonly in August (CNPS 2011). This species occurs in yellow pine forests and openings associated with coastal scrub, chaparral, cismontane woodland, riparian woodland, and in lower montane coniferous forest, between 100 and 5,900 feet in elevation (Hickman 1993, CNPS 2011). Plants on the Cleveland, Los Padres, and San Bernardino National Forests are found in riparian areas and seeps of chaparral canyons (USFS 2005c). Ocellated lily is not State or federally listed. The CNPS online Inventory includes it on List 4.2 (CNPS 2011), and it is included on the Forest Service Watch List. Threats to this species include development and horticultural collecting on the mainland, and feral herbivores on the Channel Islands (CNPS 2011). Potential threats on National Forest lands also include flooding and erosion, recreation, and fuel and vegetation treatments (USFS 2005c).

Ocellated lily is the Southern California subspecies of the Humboldt lily. It is endemic to Southern California, and is widespread, though uncommon, in the Santa Ynez and San Rafael mountains in Santa Barbara County, the Topatopa Mountains of Ventura County, the Santa Monica Mountains and Transverse Ranges of Los Angeles County, the eastern San Gabriel and San Bernardino Mountains of San Bernardino County, the Palomar and Santa Ana Mountains of Riverside County, and the Santa Ana Mountains of San Diego County (Jepson Online Interchange 2011). Ocellated lily is also found on Santa Cruz and Santa Rosa islands (CNPS 2011). The Consortium of California Herbaria lists 192 specimens for this taxon (Jepson Online Interchange 2011), including 49 from Los Angeles County. At least one of these is a recent specimen from the vicinity of the Project area (Liebre Mountain).

Based on current range and habitat preferences, ocellated lily has a possible potential to occur on all segments. One location is documented from the Project vicinity. No individuals of this species were identified during 2008, 2009, or 2010 protocol-level surveys for this Project on ANF land (POWER 2008a, POWER 2010b, POWER 2010c). **Segments in which ocellated lily may occur are described below.**

Segment D (Alternative 1): Possible. Suitable habitat exists in Chamise Chaparral, Mojave Creosote Bush Scrub, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Segment G (Alternatives 2, 2a): Possible. Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Segment 2a (Alternative 2a): Possible. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Segment I (Alternative 3): Possible. Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

ANF Reconductoring: Possible. Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Segment J (New 230 kV Circuit): Possible. Suitable habitat exists in Chamise Chaparral and Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment.

Peirson's Lupine

Peirson's lupine (*Lupinus peirsonii*) is a yellow-flowered perennial herb in the Pea Family (*Fabaceae*) that blooms in April to June. It occurs on loose gravel in Joshua tree woodland, lower montane coniferous forest, pinyon and juniper woodland, and upper montane coniferous forest, at elevations of 3,280 to 8,325 feet (Hickman 1993, CNPS 2011). It is a CNPS List 1B.3 and Forest Service Sensitive species. This species is known only from 11 occurrences in Los Angeles County, all on ANF lands in the San Gabriel Mountains (CDFG 2011, CNPS 2011).

Based on current range and habitat preferences, Peirson's lupine has a possible potential to occur on Segment D but is expected to be absent on all other segments. No individuals of this species were identified during 2008, 2009, or 2010 protocol-level surveys for this Project on ANF land (POWER 2008a, POWER 2010b, POWER 2010c). **Peirson's lupine may occur on the following segment:**

Segment D (Alternative 1): Possible. Suitable habitat exists in Joshua Tree Woodland; elevation is appropriate; and species is not known within 10 miles of segment.

Hall's Monardella

Hall's monardella (*Monardella macrantha* ssp. *hallii*) is a rhizomatous herb in the Mint Family (*Lamiaceae*). It has red-orange to yellow tubular flowers and blooms during June to October (CNPS 2011). This species occurs in openings, dry slopes, and ridges associated with broadleaved upland forest, chaparral, lower montane coniferous forest, cismontane woodland, and valley and foothill grassland, at elevations of 2,395 to 7,200 feet (CNPS 2011). It is a CNPS List 1B.3 and Forest Service Sensitive species that is threatened by road maintenance and recreational activities. There are 28 occurrences in California, one which is in Los Angeles County (CDFG 2011).

Based on current range and habitat preferences, Hall's monardella has a possible potential to occur on Segments D, G, 2a, I, the reductoring area, and J. No individuals of Hall's monardella were observed during 2008, 2009, or 2010 surveys conducted for this project on BLM lands. **Segments in which Hall's monardella may occur are described below.**

Segment D (Alternative 1): Possible. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Segment G (Alternatives 2, 2a): Possible. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Segment 2a (Alternative 2a): Possible. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Segment I (Alternative 3): Possible. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

ANF Reconductoring: Possible. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Segment J (New 230 kV Circuit): Possible. Suitable habitat exists in Chamise Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Rock Monardella

Rock monardella (*Monardella viridis* ssp. *saxicola*) is a rhizomatous herb in the Mint Family (*Lamiaceae*). This species has lavender to purple flowers and blooms during June to September (CNPS 2011). This species occurs on rocky, open slopes and often serpentine soils of montane chaparral, closed-cone coniferous forest, and lower montane conifer forest at elevations of 1640 to 5910 feet (Hickman 1993, CNPS 2011). It is a CNPS List 4.2 and Forest Service Sensitive species and is threatened by development and road maintenance, and possibly by mining and recreational activities (CNPS 2011).

Based on current range and habitat preferences, rock monardella is unlikely to occur on all components. No individuals of rock monardella were observed during 2008, 2009, or 2010 surveys conducted for this Project on ANF lands (POWER 2008a, POWER 2010b, POWER 2010c). **Segments in which rock monardella may occur are described below.**

Segment D (Alternative 1): Unlikely. Marginal habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Segment G (Alternatives 2, 2a): Unlikely. Marginal habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Segment 2a (Alternative 2a): Unlikely. Marginal habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Segment I (Alternative 3): Unlikely. Marginal habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

ANF Reconductoring: Unlikely. Marginal habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Segment J (New 230 kV Circuit): Unlikely. Marginal habitat exists in Chamise Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Baja Navarretia

Baja navarretia (*Navarretia peninsularis*) is a lavender-flowered annual herb in the Phlox Family (*Polemoniaceae*) that blooms during June to August. This species occurs in wet areas in open forest and is associated with pinyon and juniper woodlands, lower montane coniferous forest, and openings in chaparral at elevations of 4,920 to 7,550 feet (Hickman 1993, CNPS 2011). It is a CNPS List 1B.2 and Forest Service Sensitive species that is threatened by gold-panning and vehicles (CNPS 2011). There are 16 occurrences in California, 11 which are in Kern and Ventura Counties (CNPS 2011).

Based on current range and habitat preferences, Baja navarretia has a possible potential to occur on Segment I, and an unlikely potential to occur on Segments D, G, 2a, the reductoring area, and J. No individuals of Baja navarretia were observed during 2008, 2009, or 2010 surveys conducted for this

Project on BLM lands (POWER 2008a, POWER 2010b, POWER 2010c). **Segments in which Baja navarretia may occur are described below.**

Segment D (Alternative 1): Unlikely. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.

Segment G (Alternatives 2, 2a): Unlikely. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.

Segment 2a (Alternative 2a): Unlikely. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.

Segment I (Alternatives 3): Possible. Suitable habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

ANF Reconductoring: Unlikely. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.

Segment J (New 230 kV Circuit): Unlikely. Suitable habitat exists in Chamise Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.

Short-joint Beavertail

Short-joint beavertail (*Opuntia basilaris* var. *brachyclada*) is a stem succulent in the Cactus Family (*Cactaceae*). This species has pink-magenta flowers and blooms during April to June (CNPS 2011). This species is associated with chaparral, Joshua tree woodland, Mojavean desert scrub, and pinyon and juniper woodland, at elevations of 1,395 to 5,910 feet (CNPS 2011). It is a CNPS List 1B.2, Forest Service Sensitive, and BLM SS species. Short-joint beavertail is threatened by urbanization, mining, horticultural collecting, grazing, and vehicles, and possibly also by transmission line construction (CNPS 2011).

Based on protocol surveys conducted for this Project in 2008, 2009, and 2010, current range, and habitat preferences, short-joint beavertail is present on Segments D, G, 2a, I, the reconductoring area, and J (POWER 2008a, POWER 2010b, POWER 2010c). A total of 40 individuals were found within disturbance areas on Alternative 1; 84 individuals within Alternatives 2 and 2a, and the reconductoring; five on Alternative 3; and nine on the new 230 kV circuit. **Segments in which short-joint beavertail may occur are described below.**

Segment D (Alternative 1): Present. Species known within segment corridor. Suitable habitat exists in Joshua Tree Woodland, Chamise Chaparral, Mojave Creosote Bush Scrub, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.

Segment G (Alternatives 2, 2a): Present. Species known within segment corridor. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.

Segment 2a (Alternative 2a): Likely. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.

Segment I (Alternative 3): Present. Species known within segment corridor. Suitable habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is known within 10 miles of segment.

ANF Reconductoring: Present. Species known within segment corridor. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.

Segment J (New 230 kV Circuit): Present. Species known within segment corridor. Suitable habitat exists in Chamise Chaparral; elevation is appropriate; and species is known within 10 miles of segment.

Rock Creek Broomrape

Rock Creek broomrape (*Orobanche valida* ssp. *valida*) is a pink-flowered parasitic perennial in the Broomrape Family (*Orobanchaceae*) that blooms from May to September (CNPS 2011). It grows on decomposed granite in open chaparral and pinyon and juniper woodlands from 4,100 to 6,600 feet in elevation (Hickman 1993, CNPS 2011). Possible threats to Rock Creek broomrape include invasive non-native plants and recreational activities (CNPS 2011). This species is not State or federally listed. It is included on List 1B.2 of the CNPS online Inventory (CNPS 2011) and is a Forest Service Sensitive species. This species is considered to have low vulnerability on NFS lands. For the most part, it inhabits remote terrain that receives few impacts; however, management activities that affect the persistence or stability of the chaparral vegetation could adversely affect the taxon (USFS 2005c).

Rock Creek broomrape is endemic to California. It has been documented in Inyo, Ventura, Los Angeles and San Bernardino Counties (CNPS 2011). The CNDDDB (CDFG 2011) lists four occurrences, including two from the ANF. The distribution of Rock Creek broomrape on NFS lands is poorly known (USFS 2005c). Abundance data collected in the past two decades indicates that known occurrences are stable or increasing (USFS 2005c). The total number of plants is estimated at 1,600 with the majority (94 percent) occurring in the San Gabriel Mountains (USFS 2005c).

Based on current range and habitat preferences, Rock Creek broomrape has a possible potential to occur on Segments G, 2a, I, and the reconductoring area, and an unlikely potential to occur on Segments D or J. There are no occurrences known from the vicinity of the Project area. No individuals of this species were observed during 2008, 2009, or 2010 protocol-level surveys conducted for this Project on ANF lands (POWER 2008a, POWER 2010b, POWER 2010c). **Segments in which Rock Creek broomrape may occur are described below.**

Segment D (Alternative 1): Unlikely. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.

Segment G (Alternatives 2, 2a): Possible. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Segment 2a (Alternative 2a): Possible. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Segment I (Alternative 3): Possible. Suitable habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

ANF Reconductoring: Possible. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Segment J (New 230 kV Circuit): Unlikely. Suitable habitat exists in Chamise Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.

Gairdner's Yampah

Gairdner's yampah (*Perideridia gairdneri* ssp. *gairdneri*) is an erect, perennial herb in the Carrot Family (*Apiaceae*) that blooms from June to October. It is distinguished from other members of *Perideridea* by its tuberous roots in single clusters (related subspecies tuberous roots are 2-3 clustered), one-pinnate basal leaves (needed for identification) and one-veined petals (Hickman 1993). It occurs in coastal flats, grassland, and pine groves of broadleaf upland forest, chaparral, coastal prairies, valley and foothill grassland and vernal pools below 1,200 feet elevation (CNPS 2011).

Gairdner's yampah occurs throughout northern California and is scarce in Southern California. It may potentially occur in Kern, Riverside, San Bernardino and San Diego counties. It is presumed to be extirpated from Los Angeles, Orange, and San Diego Counties in Southern California if it has ever been present (CNPS 2011). Gairdner's yampah is not federally or State listed, nor is it included on the list of

Forest Service Sensitive Species (USFS 2007). The CNPS places it on List 4, a “watch” list, meaning that it has a limited distribution and any loss of habitat should be noted. Its CNPS threat extension code is .2, indicating it is fairly endangered in California (CNPS 2011).

Based on current range and habitat preferences, Gairdner’s yampah has a possible potential to occur on Segments D, I, and J, and an unlikely potential to occur on Segments G, 2a, and the reconductoring area. Gairdner’s yampah is not known to occur in the Project vicinity. No individuals of this species were observed during 2008, 2009, or 2010 protocol-level surveys conducted for this Project on ANF lands (POWER 2008a, POWER 2010b, POWER 2010c). **Segments in which Gairdner’s yampah may occur are described below.**

Segment D (Alternative 1): Possible. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Segment G (Alternatives 2, 2a): Unlikely. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.

Segment 2a (Alternative 2a): Unlikely. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.

Segment I (Alternative 3): Possible. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

ANF Reconductoring: Unlikely. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.

Segment J (New 230 kV Circuit): Possible. Suitable habitat exists in Chamise Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Southern Mountains Skullcap

Southern Mountains skullcap (*Scutellaria bolanderi* ssp. *austromontana*) is a rhizomatous herb in the Mint Family (*Lamiaceae*). The flowers are white with a blue-mottled lower lip and bloom during June to August. The species occurs on gravelly soils, streambanks, and oak or pine woodland and is associated with chaparral, cismontane woodland, and lower montane coniferous forest, at elevations of 1,400 to 6,660 feet (Hickman 1993, CNPS 2011). It is a CNPS List 1B.2 and Forest Service Sensitive species and is threatened by grazing and recreational activities (CNPS 2011).

Based on current range and habitat preferences, Southern Mountains skullcap is unlikely to occur on Segments D, G, 2a, I, the reconductoring area, and J. No individuals of this species were observed during 2008, 2009, or 2010 protocol-level surveys conducted for this Project on ANF lands (POWER 2008a, POWER 2010b, POWER 2010c). Marginal habitat to support this species is present along these segments. **Segments in which Southern Mountains skullcap occurs or may occur are described below.**

Segment D (Alternative 1): Unlikely. Marginal habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Segment G (Alternatives 2, 2a): Unlikely. Marginal habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Segment 2a (Alternative 2a): Unlikely. Marginal habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Segment I (Alternative 3): Unlikely. Marginal habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

ANF Reconductoring: Unlikely. Marginal habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Segment J (New 230 kV Circuit): Unlikely. Marginal habitat exists in Chamise Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Parish's Checkerbloom

Parish's checkerbloom (*Sidalcea hickmanii* ssp. *parishii*) is a perennial herb in the Mallow Family (*Malvaceae*). This species has pale pink to pink-lavender flowers and blooms during June to August. It is associated with sites disturbed from fire or grazing in chaparral, cismontane woodland, and lower montane coniferous forest, at elevations of 3,280 to 8,200 feet (Hickman 1993, CNPS 2011). It is a CNPS List 1B.2 and Forest Service Sensitive species. Parish's checkerbloom is threatened by urbanization, recreational activities, vegetation/fuels management, alteration of fire regimes, grazing, road maintenance, and possible also by fire suppression activities (CNPS 2011).

Based on current range and habitat preferences, Parish's checkerbloom has a possible potential to occur on Segments G, 2a, I, and the reconductoring area and an unlikely potential to occur on Segments D and J. No individuals of this species were observed during 2008, 2009, and 2010 protocol-level surveys conducted for this Project on ANF lands (POWER 2008a, POWER 2010b, POWER 2010c). **Segments in which Parish's checkerbloom occurs or may occur are described below.**

Segment D (Alternative 1): Unlikely. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.

Segment G (Alternatives 2, 2a): Possible. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Segment 2a2a (Alternative 2a): Possible. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Segment I (Alternative 3): Possible. Suitable habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

ANF Reconductoring: Possible. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Segment J (New 230 kV Circuit): Unlikely. Suitable habitat exists in Chamise Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.

Laguna Mountains Jewel Flower

Laguna Mountains jewel flower (*Streptanthus bernardinus*) is a perennial herb in the Mustard Family (*Brassicaceae*). This species has light yellow to white flowers and blooms during May to August (CNPS 2011). It is associated with chaparral and lower montane coniferous forest, at elevations of 2,200 to 8,325 feet (Hickman 1993, CNPS 2011). This species is a CNPS 4.3 and Forest Service Sensitive species and is threatened by recreational activities, road maintenance, and vehicles (CNPS 2011).

Based on current range and habitat preferences, Laguna Mountains jewel flower has a possible potential to occur on Segments G, 2a, I, and the reconductoring area and an unlikely potential to occur on Segments D and J. No individuals of this species were observed during 2008, 2009, or 2010 protocol-level surveys conducted for this Project on ANF lands (POWER 2008a, POWER 2010b, POWER 2010c). **Segments in which Laguna Mountains jewel flower occurs or may occur are described below.**

Segment D (Alternative 1): Unlikely. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Segment G (Alternatives 2, 2a): Possible. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Segment 2a (Alternative 2a): Possible. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Segment I (Alternative 3): Possible. Suitable habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

ANF Reconductoring: Possible. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Segment J (New 230 kV Circuit): Unlikely. Suitable habitat exists in Chamise Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Southern Jewel Flower

Southern jewel flower (*Streptanthus campestris*) is a perennial herb in the Mustard Family (*Brassicaceae*). The flowers are purple with light yellow bases and light purple tips, and blooms during April to July (CNPS 2011). This species occurs in rocky habitats associated with chaparral, lower montane coniferous forest, and pinyon and juniper woodland, at elevations of 2,950 to 7,660 feet (Hickman 1993, CNPS 2011). It is a CNPS List 1B.3 and Forest Service Sensitive species (CNPS 2011).

Based on current range and habitat preferences, southern jewel flower has a possible potential to occur on Segments D, G, 2a, I, and the reductoring area and an unlikely potential to occur on Segment J. No individuals of this species were observed during 2008, 2009, or 2010 protocol-level surveys conducted for this Project on ANF lands (POWER 2008a, POWER 2010b, POWER 2010c). **Segments in which southern jewel flower occurs or may occur are described below.**

Segment D (Alternative 1): Possible. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Segment G (Alternatives 2, 2a): Possible. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Segment 2a (Alternative 2a): Possible. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Segment I (Alternative 3): Possible. Suitable habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

ANF Reconductoring: Possible. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Segment J (New 230 kV Circuit): Unlikely. Suitable habitat exists in Chamise Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.

San Bernardino Aster

San Bernardino aster (*Symphyotrichum defoliatum*) is a perennial rhizomatous herb in the Sunflower Family (*Asteraceae*) that blooms from July to November. San Bernardino aster ranges from 40 to 100 cm in height with strigose foliage. Its many ray flowers are white to pale violet with yellow disk flowers (Hickman 1993). It occurs in grasslands and disturbed plants associated with vernal mesic areas near ditches, streams and springs in cismontane woodland, coastal scrub, lower montane coniferous forest, meadows and seeps, marshes and swamps and valley and foothill grassland below 7,000 feet in elevation (Hickman 1993, CNPS 2011).

San Bernardino aster is known to occur in Imperial, Kern, Los Angeles, Orange, Riverside, San Bernardino, San Luis Obispo and San Diego Counties (CNPS 2011). San Bernardino aster is a Forest Service Sensitive species (USFS 2007) but is currently not State or federally listed. CNPS places it on

List 1B (rare, threatened, or endangered in California and elsewhere), with a threat extension code of .2, indicating it is fairly endangered in California (CNPS 2011).

Based on current range and habitat preferences, San Bernardino aster has a likely potential to occur on Segments D, G, and the reconductoring area and a possible potential to occur on Segments 2a, I, and J. The nearest known occurrence is outside of the Project vicinity in the eastern foothills of the Tehachapi Mountains (CalFlora 2011). No individuals of this species were observed during 2008, 2009, or 2010 protocol-level surveys conducted for this Project on ANF lands (POWER 2008a, POWER 2010b, POWER 2010c). **Segments in which San Bernardino aster may occur are described below.**

Segment D (Alternative 1): Likely. Suitable habitat exists in California Annual Grassland, Mojave Creosote Bush Scrub, and Riversidian Sage Scrub; elevation is appropriate; and species is known within 10 miles of segment.

Segment G (Alternatives 2, 2a): Likely. Suitable habitat exists in California Annual Grassland and Riversidian Sage Scrub; elevation is appropriate; and species is known within 10 miles of segment.

Segment 2a (Alternative 2a): Possible. Suitable habitat exists in Interior Live Oak Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Segment I (Alternative 3): Possible. Suitable habitat exists in California Annual Grassland and Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment.

ANF Reconductoring: Likely. Suitable habitat exists in California Annual Grassland and Riversidian Sage Scrub; elevation is appropriate; and species is known within 10 miles of segment.

Segment J (New 230 kV Circuit): Possible. Suitable habitat exists in Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment.

Lemmon's Syntrichopappus

Lemmon's syntrichopappus (*Syntrichopappus lemmonii*) is a diminutive white-flowered annual herb in the Sunflower Family (*Asteraceae*) that blooms April to May (CNPS 2011). Lemmon's syntrichopappus occurs in chaparral, Joshua tree woodland, and pinyon and juniper woodland in sandy and gravelly habitats, often in decomposed granite, at elevations ranging from 1,640 to 6,000 feet (CNPS 2011). This species is not State or federally listed. It is included on List 4.3 of the CNPS online Inventory (CNPS 2011) and is on the Forest Service Watch List. Potential threats to this species include off-road vehicle damage and exotic annual grass invasion promoted by (and promoting) frequent fire (CNPS 2011, USFS 2005c). This species is tolerant of low to moderate disturbance (USFS 2005c).

Lemmon's syntrichopappus is endemic to California. It has been documented in the inner South Coast Ranges in Monterey County, and from the Transverse Ranges, and the San Gabriel, San Bernardino, and San Jacinto Mountains in Kern, Los Angeles, San Bernardino, and Riverside Counties (CNPS 2011, USFS 2005c). The Consortium of California Herbaria (Jepson Online Interchange 2011) lists 94 specimens for this species, of which 36 are from Los Angeles County. One recent specimen was collected in the Liebre Mountains, in the vicinity of the Project area.

Based on current range and habitat preferences, Lemmon's syntrichopappus has a possible potential to occur on Segments D, G, 2a, I, the reconductoring area, and J. No individuals of this species were found during 2008, 2009, or 2010 protocol-level surveys conducted for this Project on ANF lands (POWER 2008a, POWER 2010b, POWER 2010c). **Segments in which Lemmon's syntrichopappus may occur are described below.**

Segment D (Alternative 1): Possible. Suitable habitat exists in Joshua Tree Woodland, Chamise Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Segment G (Alternatives 2, 2a): Possible. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Segment 2a (Alternative 2a): Possible. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Segment I (Alternative 3): Possible. Suitable habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

ANF Reconductoring: Possible. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Segment J (New 230 kV Circuit): Possible. Suitable habitat exists in Chamise Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

3.1.2 Sensitive Wildlife

Various sensitive or listed species could occur within the ANF as presented in Table 6, along with their potentials to occur within the forested Project area. Focused or protocol surveys were conducted for various species and/or suitable habitat within the ANF from 2008 to 2010, including arroyo toad (*Anaxyrus californicus*), California red-legged frog (*Rana draytonii*), southwestern willow flycatcher (*Empidonax traillii extimus*), least Bell's vireo (*Vireo bellii pusillus*), coastal California gnatcatcher (*Poliophtila californica californica*), western yellow-billed cuckoo (*Coccyzus americanus occidentalis*), California spotted owl (*Strix occidentalis occidentalis*), pallid bat (*Antrozous pallidus*), Townsend's big-eared bat (*Corynorhinus townsendii*), and western red bat (*Lasiurus blossevillei*). The potentials for these species to occur as listed in Table 6 are a reflection of the survey results combined with the likelihood of the Project area to support the species for nesting, breeding or foraging activity. The remainder of the species in the table was analyzed according to the above criteria and any additional known occurrence information.

Management Indicator Species (MIS): MIS are selected by the Forest Service because changes in their populations and abundance are believed to indicate the effects of forest management activities (36 CFR 219.19(a)(1) 1982). An assessment was performed to evaluate the potential impacts of the BR RTP on the MIS identified in the 2005 ANF Land Management Plan. Please see Appendix C for the results of the assessment.

Species which are determined to be present, potential, likely or unlikely to occur are described in greater detail below with species accounts and direct, indirect, and cumulative effects. Refer to Table 6 for a brief description on Forest Service listed species that are absent from the Project area.

Swainson's Hawk

Swainson's hawk (*Buteo swainsonii*) is a State Threatened and Forest Service Sensitive species, as well as a USFWS Bird of Conservation Concern.

Swainson's Hawk is a medium-sized hawk with relatively long, pointed wings and a long, square tail. Its breeding habitat includes grasslands with scattered trees, juniper-sage flats, riparian areas, savannahs, and agricultural fields and ranches. Hawks are restricted to portions of the Central Valley and Great Basin regions where suitable nesting and foraging habitat is still available. The loss of agricultural lands to various residential and commercial developments is a serious threat to this hawk throughout California.

It breeds in grasslands with scattered trees, juniper-sage flats, riparian areas, savannahs, agricultural areas, and ranches. It also requires adjacent suitable foraging areas such as grasslands or alfalfa or grain fields which support rodent populations.

Because its winter range encompasses the Project area, this species may occur within some of the Project's component areas, although in some cases it may only be a migrant passing through. **The Project components in which Swainson's hawk may occur are described below.**

Segment D (Alternative 1): Possible. There are no reported sightings along this segment, although it contains large patches of grassland and shrub habitat.

Segment G (Alternatives 2, 2a): Possible. POWER biologists identified several Swainson's hawks circling over Segment G in 2009 over scattered annual grassland habitat. This segment contains mostly chaparral habitat, with the exception of riparian habitat in San Francisquito Canyon and north of Drinkwater Flats along with grassland north of forest boundaries in the Antelope Valley. The California Aqueduct also runs roughly perpendicular to this segment and provides a water source for any hawks.

Segment I (Alternative 3): Possible. There are no reported sightings along this segment, which is mostly disturbed grassland with sparse shrub cover north of the montane region. The California Aqueduct passes through this segment, providing a possible source of water for nearby birds.

ANF Reconductoring: Possible. POWER biologists identified several Swainson's hawks circling over the reductoring area in 2009 over scattered annual grassland habitat. This segment contains mostly chaparral habitat, with the exception of riparian habitat in San Francisquito Canyon and north of Drinkwater Flats, along with grassland north of forest boundaries in the Antelope Valley. The California Aqueduct also runs roughly perpendicular to this segment and provides a water source for any hawks.

Peregrine Falcon

The peregrine falcon (*Falco peregrinus*) is a federally Delisted species, State Endangered species, and Forest Service watch list species, as well as a CDFG Fully Protected species and USFWS Bird of Conservation Concern.

It resides near wetlands, lakes, rivers, or other bodies of water, generally on cliffs, banks, dunes, mounds, and man-made structures. The nest consists of a scrape on a depression or a ledge in an open site, or occasionally in an older nest.

Based on available suitable habitat and a lack of reported sightings, this species is not expected to occur throughout most of the Project area. **Segments in which peregrine falcon may occur are described below.**

Segment D (Alternative 1): Possible. There are no reported sightings along this segment, but it contains a large amount of available water at Castaic Lake, Pyramid Lake and Quail Lake. It also has an abundance of nesting habitat in the form of man-made structures in various buildings around Castaic Lake and Templin Highway and the numerous existing power lines that parallel the planned segment.

Segment G (Alternatives 2, 2a): Possible. There are no reported sightings along this segment, but it contains an available water source in San Francisquito Canyon. Appropriate nesting habitat on cliffs and ledges can be found in the large boulders and rock formations along the western side of San Francisquito Canyon, along with the many buildings and existing transmission towers on this segment.

Segment 2a (Alternative 2a): Unlikely. There are no reported sightings along this alternative, which contains a perennial water source in South Portal Creek. There may also be some minimal nesting habitat.

Segment I (Alternative 3): Unlikely. There are no reported sightings along this segment, and it contains limited water availability, which is mainly present in the form of small perennial waterways and the California Aqueduct north of forest boundaries. Appropriate nesting habitat is mainly limited to the numerous existing transmission lines and possibly some rocky areas in the southeastern portion of the segment.

ANF Reconductoring: Possible. There are no reported sightings along this component, but it contains an available water source in San Francisquito Canyon. Appropriate nesting habitat on cliffs and ledges can

be found in the large boulders and rock formations along the western side of San Francisquito Canyon, along with the many buildings and existing transmission towers on this segment.

Segment J (New 230 kV Circuit): Possible. While there are no reported sightings along this segment, there is abundant water near this segment at Castaic Lake and Castaic Lagoon. Seasonal water flows through Castaic and Charlie Creeks. This species may find nesting habitat on existing transmission towers or on or around the dam at Castaic Lake. Peregrine falcon is expected to have a possibility of occurring along Segment J.

Bald Eagle

The bald eagle (*Haliaeetus leucocephalus*) is a federally Delisted species, but continues to be a State-listed Endangered species and a Forest Service Sensitive species as well as a CDFG Fully Protected species.

It is found in most of North America, though about half of its total population can be found in Alaska. It prefers to use ocean shores, lake margins, and rivers for both nesting and wintering, and most nests will be located within one mile of the water source. It nests in large, old-growth or dominant live trees with open branches, especially Ponderosa pine, and roosts communally in winter. The diet is composed of fish. The bald eagle was declared an endangered species in 1967, and upgraded to "threatened" in 1995. In 2007 the bald eagle was removed from the Endangered Species List, but it remains protected under the Migratory Bird Treaty and the Bald and Golden Eagle Protection Act.

Based on reported sightings and availability of suitable habitat, this species is not expected to occur in most of the Project area. **Segments in which bald eagle may occur while overwintering are described below.**

Segment D (Alternative 1): Possible. There is one reported sighting by an ANF employee near this segment, and there is ample available water for any wintering eagles (N. Sill, personal communication). Castaic Lake, Pyramid Lake, and Quail Lake would provide water for eagles, although sufficient nesting habitat may be limited or fragmented.

Segment J (New 230 kV Circuit): Possible. There are no reported sightings near this segment, but there is ample available water for any wintering eagles at Castaic Lake and Castaic Lagoon. Nesting habitat is limited.

California Spotted Owl

California spotted owl (*Strix occidentalis occidentalis*) is a Forest Service Sensitive and Management Indicator Species, BLM Sensitive species, CDFG Species of Special Concern, and USFWS Bird of Conservation Concern.

At elevations below 1,000 meters, California spotted owls inhabit areas dominated by oaks and other hardwoods, and coniferous forests at higher elevations (Gutiérrez et al. 1995). They prefer to nest and roost in areas with older, large diameter trees and dense canopy coverage (Bias and Gutiérrez 1992). Foraging habitat is more variable and may also possess intermediate aged trees. Tree densities decrease and shrub densities increase as owls descend to wintering habitat at lower elevations (Gutiérrez et al. 1992).

Pair-bonding for California spotted owls begins with paired roosting and male-to-female courtship feeding beginning in February and early March, followed by nest site selection and egg-laying about a month later (Forsman 1984). Spotted owls outside of the Sierra Nevada use platform nests built by other species, laying one brood of four to six eggs per season in March or April (Gutiérrez et al. 1992). Renesting is rarely initiated after nest failure (Kroel and Zwank 1994). Incubation only occurs by the female, and lasts for around 30 days. During this period, food items are provided by the male. The female

will brood the young for eight to ten days before beginning to forage for longer periods and spend more time away from the nest, until the young fledge after approximately five weeks. Egg-laying peaks in mid-April. Fledglings generally disperse in September or October after reaching adult weight (Gutiérrez et al. 1995).

The dusky footed woodrat is the predominant prey for California spotted owls outside of the Sierra Nevada Range, particularly in the San Bernardino Mountains (Verner et al. 1992). Other important prey include pocket gophers (*Thomomys* spp.), broad-footed moles (*Scapanus latimanus*), mice (*Peromyscus* spp.), chipmunks (*Eutamias* spp.), and squirrels (Douglas's squirrel [*Tamiasciurus douglasii*], western gray squirrel [*Sciurus griseus*], and California ground squirrel [*Spermophilus beecheyi*]). Insects are the most numerous prey, but contribute a minor amount to total intake in terms of mass (Gutiérrez et al. 1995).

Based on reported sightings and available suitable habitat as located during 2008 and 2009 habitat assessment surveys (POWER 2009b, POWER 2010d), this species is not expected to occur throughout much of the Project area. **Segments on which California spotted owl may occur are described below.**

Segment D (Alternative 1): Unlikely. There are no reported occurrences along this segment, although eight nesting and foraging habitat locations were mapped during focused surveys in 2008 and 2009 (POWER 2009b, POWER 2010d). Three of these areas—Fisher Spring, Liebre Gulch, and Oak Flat Spring—were all deemed to be of moderate quality and were used as calling sites, while the rest of the available habitat on this segment was deemed to be of poor quality and insufficient for calling surveys (POWER 2010d, POWER 2010e).

Segment G (Alternatives 2, 2a): Possible. There are no reported occurrences along this segment, although 12 nesting and foraging habitat locations were mapped during focused surveys in 2008 and 2009 (POWER 2009b, POWER 2010d). Two of these areas—Baird Canyon and Craig Spring—were deemed to be of moderate quality, while five others—Clearwater Canyon, San Francisquito Canyon, Grass Mountain, Pettinger Canyon, and Spunky Canyon—were deemed to be of good quality (POWER 2010d, POWER 2010e). Calling surveys were conducted on all seven of these sites, while the remaining four sites were deemed to be of poor quality and insufficient for calling surveys.

Segment 2a (Alternative 2a): Possible. There are no reported occurrences along this alternative, but focused surveys in 2008 and 2009 identified good quality habitat for this species within South Portal Canyon (POWER 2009b, POWER 2010d). Calling surveys were conducted within this canyon, but no individuals were located (POWER 2010d, POWER 2010e).

ANF Reconductoring: Possible. There are no reported occurrences along this component, although 12 nesting and foraging habitat locations were mapped during focused surveys in 2008 and 2009 (POWER 2009b, POWER 2010d). Two of these areas—Baird Canyon and Craig Spring—were deemed to be of moderate quality, while five others—Clearwater Canyon, San Francisquito Canyon, Grass Mountain, Pettinger Canyon, and Spunky Canyon—were deemed to be of good quality (POWER 2010d, POWER 2010e). Calling surveys were conducted on all seven of these sites, while the remaining four sites were deemed to be of poor quality and insufficient for calling surveys.

Segment J (New 230 kV Circuit): Possible. There are no reported occurrences along this segment, although two nesting and foraging habitat locations were mapped during focused surveys in 2008 and 2009 (POWER 2009b, POWER 2010d). Charlie Canyon was deemed to be poor quality, while Dry Canyon was deemed to be good quality (POWER 2010d). Three calling stations were established in Dry Canyon, which consists of a wide rocky/sandy streambed with groupings of coast live oak (*Quercus agrifolia*) scattered along its edges.

Pallid Bat

The pallid bat (*Antrozous pallidus*) is a Forest Service Sensitive species, BLM Sensitive species, CDFG Species of Special Concern, and Western Bat Working Group High Priority species (CDFG 2009).

Pallid bats inhabit low elevation (less than 6,000 feet) rocky arid deserts and canyonlands, and shrub-steppe grasslands, but also occur in higher elevation coniferous forests (greater than 7,000 feet). They are most abundant in xeric ecosystems, including the Great Basin, Mojave, and Sonoran Deserts (Hermanson and O'Shea 1983). Pallid bats roost alone, in small groups, or in large groups composed of hundreds of individuals (Rambaldini 2005). Day and feeding roosts include escarpments and cliffs, caves, mines, trees (especially oak cavities, exfoliating bark, and deciduous trees in riparian areas) and man-made structures such as bridges, barns, porches, bat boxes, and buildings. Roosts are generally warmer than ambient temperature, have unobstructed entrances/exits, and are at such a height that access by terrestrial predators is dissuaded (Rambaldini 2005). Although roost fidelity is common, they may switch day roosts on a daily or seasonal basis.

Pallid bats forage over many habitat types, including shrub-steppe or oak savannah grasslands, Ponderosa pine forests, talus slopes, gravel roads, lava, orchards, and vineyards (Rambaldini 2005). Known prey include a large variety of beetles, centipedes, lepidopterans, moths, praying mantids, scorpions, and termites. Vertebrates, such as geckos, lizards, skink, and small rodents, are taken on occasion (Whitaker et al. 1981). They generally take terrestrial vertebrates, but will also take aerial pray. However, foraging style and diet composition vary within and between populations.

Females typically have one or two pups each year, although incidences of three pups have been reported. Mating generally occurs between October and February, followed by parturition from late April to July, and finally weaning in August. Timing of these events varies across latitudes and between years, and is probably influenced by prey availability and temperature. Populations at higher latitudes and in cooler climates give birth later in the season. Sexual maturity is reached approximately one year after birth, with females maturing quicker than males (Rambaldini 2005). In some cases sexual maturity may take as long as two years to obtain (AGFD 2002). Maternity colonies dissolve between weaning in August and the next mating season in October (Rambaldini 2005).

The pallid bat appears to be particularly sensitive to human disturbance during warm summer months when night roost temperatures are high. At cooler temperatures when their activity levels are low and their arousal rates are much slower, however, they are more tolerant of disturbance (Vaughan and O'Shea 1976). Disturbance of roosts, hibernacula, or maternity colonies is particularly damaging to pallid bats, as is the loss or modification of foraging habitat (Rambaldini 2005). Pesticides in particular have been implicated in the decline of pallid bat populations (AGFD 2002).

The Project area and nearby areas contain trees and man-made structures that may provide suitable roosting habitat for this species. In addition, the Project area provides foraging habitat for this species. The pallid bat was detected at seven of seventy-six sites surveyed from 1996 to 1998 in the mountains and foothills of Southern California (including three sites on the ANF and four sites on the Los Padres National Forest), at elevations ranging from 1,100 to 6,600 feet (Stephenson and Calcarone 1999).

While there are no recent recorded sightings of this species within the Project area, based on availability of roosting and foraging habitat, this species is likely to occur on Alternative 2, Alternative 2a and the reconductoring component within the ANF. **Segments on which pallid bat may occur are described below.**

Segment D (Alternative 1): Likely. This segment contains shrubs and grasslands in its northern portion outside of the ANF, with mostly chaparral and patches of coastal sage scrub on its southern portion. There are rocky outcrops within the lower section of this segment that may provide roosting opportunities, while grasslands in the upper section would provide foraging habitat if the animals can roost close enough.

Segment G (Alternative 2): Likely. This segment contains large rock formations in San Francisquito Canyon, along with chaparral, grassland, and riparian habitat throughout different parts of the segment.

The rock formations and existing buildings would provide roosting habitat for this species, while the chaparral and grassland would provide foraging habitat.

Segment 2a (Alternative 2a): Likely. This segment contains mostly dense chaparral in its northern portion and oak woodland surrounded by chaparral in its southern portion, with a perennial stretch of water in South Portal Creek. Pallid bat is expected to be unlikely to occur along the Alternative 2a. Segment G of Alternative 2a contains large rock formations in San Francisquito Canyon, along with chaparral, grassland, and riparian habitat throughout different parts of the segment. The rock formations and existing buildings would provide roosting habitat for this species, while the chaparral and grassland would provide foraging habitat.

Segment I (Alternative 3): Likely. This segment contains mostly chaparral and riparian habitat in its southern portion and is mostly chaparral, desert scrub, or grassland in its northern portion. There are many buildings along this segment on Sierra Highway that may provide roosting habitat. There are rocky outcrops along this segment that would also provide roosting habitat.

ANF Reconductoring: Likely. This component contains large rock formations in San Francisquito Canyon, along with chaparral, grassland, and riparian habitat throughout different parts of the segment. The rock formations and existing buildings would provide roosting habitat for this species, while the chaparral and grassland would provide foraging habitat.

Segment J (New 230 kV Circuit): Possible. This segment contains mostly chaparral, some patches of coastal sage scrub, and riparian habitat around Castaic Lake and Castaic Lagoon. There are some roosting opportunities around Castaic Lake and Lagoon, and some rocky outcrops around Castaic Power Plant.

Townsend's Big-Eared Bat

Townsend's big-eared bat (*Corynorhinus townsendii*) is a Forest Service Sensitive species, BLM Sensitive species, CDFG Species of Special Concern, and Western Bat Working Group High Priority species (CDFG 2009).

Townsend's big-eared bat occurs from sea level to 11,000 feet and is associated with a wide variety of habitat types, including coniferous forests, mixed deciduous forests, deserts, native prairies, riparian communities, active agricultural areas, and coastal habitat types. It occurs throughout California in a variety of habitats, but is most commonly found in mesic sites. The distribution of Townsend's big-eared bats is strongly correlated with the availability of caves and cave-like roosting habitat, with population centers occurring in areas dominated by exposed, cavity-forming rock and/or historic mining areas (Stephenson and Calcarone 1999). Abandoned mines are particularly important where availability of well-developed caves is low (Stephenson and Calcarone 1999). This species may also roost in man-made structures, particularly at night (AGFD 2003a, Piaggio 2005, Reid 2006). Roosting sites are the most important limiting factor for this species. Summer maternity colonies are single-sex and range in size from a few individuals to several hundred individuals (Piaggio 2005). Winter hibernating colonies are composed of mixed-sex groups, which can range in size from a single individual to colonies of several hundred animals. Roosting site fidelity is largely dependent upon site availability. In coastal California regions, where roosting site availability is found sparingly, fidelity is typically high.

Townsend's big-eared bat forages in association with edge habitats in proximity to a variety of woodlands. They are moth specialists, with over 90% of their diet comprised of lepidopterans. These bats often travel large distances while foraging, including movements greater than 150 kilometers during a single evening. Large foraging distances and home ranges have been documented in California in particular (Piaggio 2005).

Mating generally takes place between October and February in both transitory migratory sites and hibernacula. Maternity colonies form between March and June and timing varies according to local climactic factors. A litter consists of a single pup born between May and July. Dispersal from natal ranges

into others appears to primarily be mediated by males, while females remain in the general vicinity of their birthplace (i.e., philopatry).

This bat species is threatened by the loss of clean, open water, modification or destruction of roosting and foraging habitat, and disturbance or destruction of hibernacula, which has been recognized as the foremost threat to this species (Miner and Stokes 2005, Piaggio 2005).

The Project vicinity and nearby areas contain man-made structures that may provide suitable roosting habitat for Townsend's big-eared bats. In addition, the Project area contains suitable foraging habitat for this species. Little is known about the distribution and abundance of this species. The Townsend's big-eared bat was detected at six of seventy-six sites surveyed from 1996 to 1998 in the mountains and foothills of Southern California (one site on the San Bernardino National Forest and five sites on the Cleveland National Forest) (Stephenson and Calcarone 1999). More importantly, it was found at fourteen abandoned mine locations in the northeastern San Bernardino Mountains, with fifty-five individuals observed in one mine (Stephenson and Calcarone 1999). Based on the availability of rocky roosting habitat and grassy and shrubby foraging habitat, Townsend's big-eared bat is likely to occur on the Project segments as described below.

Segment D (Alternative 1): Likely. This segment contains mostly grassland and shrubland in its northern portion with chaparral in its southern portion. There are rocky outcrops near Castaic Power Plant on the east side of Castaic Creek.

Segment G (Alternative 2): Likely. This segment contains large rock formations in San Francisquito Canyon, along with chaparral, grassland, and riparian habitat throughout different parts of the segment.

Segment 2a (Alternative 2a): Likely. This segment contains mostly dense chaparral in its northern portion and oak woodland surrounded by chaparral in its southern portion, with a perennial stretch of water in South Portal Creek. There are some buildings nearby in San Francisquito Canyon. Townsend's big-eared bat is expected to be likely to occur along Alternative 2a. Segment G of Alternative 2a contains large rock formations in San Francisquito Canyon, along with chaparral, grassland, and riparian habitat throughout different parts of the segment.

Segment I (Alternative 3): Likely. This segment contains mostly chaparral and riparian habitat in its southern portion and is mostly chaparral, desert scrub, or grassland in its northern portion. There are many buildings along this segment on Sierra Highway that may provide roosting habitat. There are rocky outcrops along this segment that would also provide roosting habitat.

ANF Reconductoring: Likely. There are large rock formations in San Francisquito Canyon, along with chaparral, grassland, and riparian habitat throughout different parts of the segment.

Segment J (New 230 kV Circuit): Possible. This segment contains mostly chaparral, some patches of coastal sage scrub, and riparian habitat around Castaic Lake and Castaic Lagoon. There are some roosting opportunities around Castaic Lake and Lagoon, and some rocky outcrops around Castaic Power Plant, where this segment ends and Segment D continues.

Western Red Bat

Western red bat (*Lasiurus blossevillei*) is a CDFG Species of Special Concern and Western Bat Working Group High Priority species, and is designated by the Regional Forester as a Forest Service Sensitive species (CDFG 2009).

Its range extends between North, Central, and South America, and it migrates south in the winter for hibernation. Western red bat is closely associated with riparian habitats, particularly those containing willows (*Salix* spp.), cottonwoods (*Populus* spp.) and sycamores (*Platanus racemosa*). This species utilizes riparian trees, shrubs, and leaf litter for roost sites (Stephenson and Calcarone 1999). Red bats roost at sites that provide coverage in every direction, except directly downwards, which allows them to drop from their roosting site to take flight. Other characteristics include the lack of perches below that

would allow detection of and access by predators (scrub jays, falcons, accipiters, owls, roadrunners, opossums), the presence of dark ground cover beneath to reduce solar reflection into the roost, the presence and density of nearby vegetation to reduce dust and wind, and a south to southwest aspect (Bolster 2005).

Western red bats feed from the wing, taking such prey items as homopterans, coleopterans, hymenopterans, dipterans, and lepidopterans. Red bats generally begin to forage shortly after sunset. Although some may forage throughout the night, most typically have an initial foraging period followed by a resting period, which is then followed with another minor activity period corresponding to insects that become active several hours before sunrise (Bolster 2005).

Mating occurs in late summer or early fall, but females do not become pregnant until spring. Parturition lasts 80 to 90 days. Females may have litters of up to five pups per year, born between late May and mid-June (AGFD 2003b, Bolster 2005).

Agricultural conversion, reservoir construction, and urban expansion are possible sources of severe habitat loss within the winter and summer habitat of coastal Southern California, as is the loss of mature cottonwood habitat (AGFD 2003b, Miner and Stokes 2005). Disturbance to roosting sites can also have detrimental effects on western red bats.

Riparian tree species utilized as roosting habitat by the western red bat are ubiquitous in some portions of the Project area. Additional potential roosting and forage habitat is provided by the wide-array of shrub species found both in and in close proximity to the Project area. Based on the availability of suitable riparian roosting and foraging habitat, western red bat is likely to occur on Project segments within the ANF as described below.

Segment D (Alternative 1): Likely. There is riparian habitat that is appropriate for this species in the southern portion of this segment, particularly around Castaic Creek.

Segment G (Alternative 2): Likely. There is riparian habitat that is appropriate for this species in San Francisquito Canyon, Bee Canyon, and Pettinger Canyon.

Segment 2a (Alternative 2a): Likely. There is oak woodland along a perennial stretch of South Portal Creek in this alternative. There are also other riparian tree species mixed in with the oak trees. Western red bat is expected to be likely to occur along Segment 2a. Segment G of Alternative 2a also contains riparian habitat that is appropriate for this species in San Francisquito Canyon, Bee Canyon, and Pettinger Canyon.

Segment I (Alternative 3): Likely. There are some riparian trees and vegetation along this segment's Sierra Highway portion and up in its mountainous areas.

ANF Reconductoring: Likely. There is riparian habitat that is appropriate for this species in San Francisquito Canyon, Bee Canyon, and Pettinger Canyon.

Segment J (New 230 kV Circuit): Likely. There are some riparian trees along San Francisquito Canyon, Castaic Lake, and around Castaic Power Plant where this segment terminates.

Tehachapi Pocket Mouse

Tehachapi pocket mouse (*Perognathus alticolus inexpectatus*) is a Forest Service Sensitive species and CDFG Species of Special Concern.

Its habitat includes arid annual grassland and desert shrub communities, but it can also reside in fallow grain fields and Russian thistle. The range extends from the Tehachapi Pass southwest towards Gorman, west to Cuddy Valley near Mount Pinos, and east along the San Gabriel Mountains to Elizabeth Lake. The Tehachapi pocket mouse forages on open ground and under shrubs. It aestivates and hibernates

during extreme weather and burrows for cover and nesting in loose, sandy soils ranging between approximately 3,500 and 6,000 feet in elevation.

Based on reported sightings and availability of suitable habitat within this species' preferred regional range and elevation range, this species may occur on several of the Project's segments. **Segments on which Tehachapi pocket mouse may occur are described below.**

Segment D (Alternative 1): Unlikely. There are two recent reported sightings approximately six miles north of this segment in the Tehachapi Mountains (CDFG 2010). The northern section of this segment, outside the ANF boundaries, runs near the base of the Tehachapi Mountains and has stretches of appropriate desert shrub and grassland habitat interrupted by State Route 138, the California Aqueduct, and various residences such as those around the community of Neenach. This segment is approximately 400 to 1,000 feet below the bottom end of this species' preferred elevation range, although there are areas within it that are within the elevation range.

Segment G (Alternatives 2, 2a): Possible. There are no recent recorded sightings of this species near this segment, which is just outside of the species' known range. A historical sighting from 1938 is possibly extirpated (CDFG 2011). The habitat in this area is grassland and chaparral that is interrupted by scattered residences and the community of Elizabeth Lake. This segment is on the edge of the species' preferred elevation range in this area.

Segment 2a (Alternative 2a): Possible. There are no recent recorded sightings of this species near this segment, which is just outside of the species' known range. A historical sighting from 1938 is possibly extirpated (CDFG 2011). The habitat in this area is mainly dense chaparral. This segment is on the edge of the species' preferred elevation range in this area.

ANF Reconductoring: Possible. There are no recent recorded sightings of this species near this component, which is just outside of the species' known range. A historical sighting from 1938 is possibly extirpated (CDFG 2011). The habitat in this area is grassland and chaparral that is interrupted by scattered residences and the community of Elizabeth Lake. This component is on the edge of the species' preferred elevation range in this area.

Arroyo Chub

Arroyo chub (*Gila orcutti*) is a Forest Service Sensitive species and CDFG Species of Special Concern.

It lives in Los Angeles Basin south coastal streams, in slow water stream sections with mud or sand bottoms. It feeds heavily on aquatic vegetation and associated invertebrates. Breeding occurs fairly continuously between February and August, with spawning occurring in waters typically between 14 and 22°C. Their diet includes algae, small insects, and other invertebrates.

Based on reported sightings and availability of suitable habitat, this species is not expected to occur throughout most of the Project area. **Segments in which arroyo chub may occur are described below.**

Segment D (Alternative 1): Unlikely. There are no reported sightings along this segment, but there are isolated spots of appropriate sandy stream bottoms which will have to be crossed for access. However, these areas are believed to be dry most of the year based on 2008 to 2010 surveys and may not support a population of the fish.

Segment G (Alternatives 2, 2a): Possible. This species was identified to POWER by a USGS biologist during a 2009 survey in the St. Francis Dam reach of lower San Francisquito Creek, where deep natural and artificial ponds have been created that hold water perennially in a dense riparian stretch (S. Schuster, personal communication, March 2009). However, upstream of this isolated portion, San Francisquito Creek is not known to be perennial until north of Bee Canyon. The area between Bee Canyon and the known population is intermittent and has been observed to be dry most of the year. Forest Road 5N27, which crosses San Francisquito Creek and allows alternate access between San Francisquito Canyon and

Segment G, will not be used by construction. The ANF Land Management Plan (USFS 2005c) considers this species to be present within San Francisquito Creek, although it is unclear if it is believed or known to be present anywhere in San Francisquito Creek upstream of Forest Road 5N27. The access road through Bee Canyon would be used by construction. This would cross through San Francisquito Creek, but multiple arroyo toad and California red-legged frog protocol surveys in 2008 to 2010 at multiple locations in this stretch of the creek failed to incidentally observe any arroyo chub.

Segment I (Alternative 3): Unlikely. There are no reported sightings of this species along this segment, which contains several miles of potentially suitable habitat within Vasquez Canyon and alongside Sierra Highway. However, these streambeds were not observed to be flowing during any of the various surveys which were conducted in 2008 and 2009 for this Project, and may not be able to support a population if there are no perennial water sources.

ANF Reconductoring: Possible. This species was identified to POWER by a USGS biologist during a 2009 survey in the St. Francis Dam reach of lower San Francisquito Creek, where deep natural and artificial ponds have been created that hold water perennially in a dense riparian stretch (S. Schuster, personal communication, March 2009). However, upstream of this isolated portion, San Francisquito Creek is not known to be perennial until north of Bee Canyon. The area between Bee Canyon and the known population is intermittent and has been observed to be dry most of the year. Forest Road 5N27, which crosses San Francisquito Creek and allows alternate access between San Francisquito Canyon and Segment G, would not be used by construction. The ANF Land Management Plan (USFS 2005c) considers this species to be present within San Francisquito Creek, although it is unclear if it is believed or known to be present anywhere in San Francisquito Creek upstream of Forest Road 5N27. The access road through Bee Canyon would be used by construction. This would cross through San Francisquito Creek, but multiple arroyo toad and California red-legged frog protocol surveys in 2008 to 2010 at multiple locations in this stretch of the creek failed to incidentally observe any arroyo chub.

Segment J (New 230 kV Circuit): Possible. There are no reported sightings of this species along this segment, which passes over Dry Canyon, San Francisquito Canyon, Charlie Canyon, and Bitter Canyon. None of these canyons has perennially flowing water at the point that the power lines pass over. The streambeds contain combinations of sand and/or rock. The ANF Land Management Plan (USFS 2005c) considers this species to be present within San Francisquito Creek, although it is unclear if it is believed or known to be present anywhere in San Francisquito Creek near this Project component.

California Legless Lizard

California legless lizard (*Anniella pulchra*) is designated by the Regional Forester as a Forest Service Sensitive species, and is also listed by the CDFG as a Species of Special Concern.

California legless lizard is a fossorial species associated with sandy or loose loamy soils under the sparse vegetation of coastal strand, chaparral, coastal sage scrub or pine-oak woodland, or under sycamores and cottonwoods in riparian areas (Jennings and Hayes 1994). It also occurs in desert scrub along the western edge of the Mojave Desert near Lancaster and in western portions of the Anza-Borrego Desert State Park. California legless lizards are often found under surface cover such as logs, rocks, and leaf litter, where soil moisture is high, as this characteristic is apparently essential to their survival (Stephenson and Calcarone 1999). Fisher and Case (1997 in Stephenson and Calcarone 1999) described finding this species at several locations in the eastern Santa Ana Mountains within oak woodland, chaparral, and coastal scrub vegetation in decomposing granitic soils. They suggested that the distribution of these lizards in foothill and lower montane habitats may be closely tied to this friable substrate type.

Legless lizards are reasonably tolerant to lower temperatures, preferring temperatures between 20 and 25°C but remaining active above 13°C (Fellers 2009). This allows them to be active on cool days when potentially competing species (e.g., juvenile alligator lizards, skinks) remain inactive. Individuals from coastal and southern localities are probably active year-round with only brief periods of winter inactivity. Lizards from cooler locales (e.g., the Sierra foothills) undergo winter hibernation.

Reproduction begins with mating activities in late spring or early summer. The gestation period is about four months (Jennings and Hayes 1994). Live young are usually born from September to October, and occasionally into November. Litter size ranges from one to four but two is common (Stebbins 2003).

Based on the lack of reported sightings and the availability of suitable habitat, this species is not expected to occur throughout most of the Project area. **Segments in which it may occur are described below.**

Segment D (Alternative 1): Unlikely. There are no reported sightings of this species within this segment, which contains isolated patches of possibly suitable habitat.

Segment G (Alternatives 2, 2a): Unlikely. There are no reported sightings of this species within this segment, which contains limited suitable habitat in various locations near or within streambeds.

Segment I (Alternative 3): Possible. There are no reported sightings of this species within this segment from within the last ten years (CDFG 2010). However, this segment contains large patches of sage scrub mixed with other habitat types that may have loose, sandy soils nearby enough to provide suitable habitat.

ANF Reconductoring: Unlikely. There are no reported sightings of this species along this component, which contains limited suitable habitat in various locations near or within streambeds.

Segment J (New 230 kV Circuit): Possible. There are no reported sightings of this species within this segment, but suitable habitat exists in Dry Canyon and Charlie Canyon. These areas contain sandy substrates—Dry Canyon is also rocky—with coast live oak woodland interspersed throughout the streambed. Charlie Canyon also contains cottonwood (*Populus fremontii*) and *Eucalyptus* trees along its streambed.

Southwestern Pond Turtle

Southwestern pond turtle (*Actinemys marmorata pallida*) is designated by the Regional Forester as a Forest Service Sensitive species, and is also listed by the CDFG as a Species of Special Concern (CDFG 2009).

Southwestern pond turtles are scarce anywhere above 5,000 feet (Holland 1994) and generally inhabit low elevation aquatic habitats below 4,000 feet (Stephenson and Calcarone 1999). In Southern California, southwestern pond turtles are primarily found in rivers and streams that have persistent deep pools or in lacustrine habitats (Holland 1994). However, they are also known to live within disturbed or altered habitat such as reservoirs, gravel pits, stock ponds, and sewage treatment plants, although these animals are often merely displaced (Holland 1994). Pond turtles regularly utilize upland terrestrial habitat, most often during the summer and winter, especially for oviposition (females), mate seeking (males), overwintering, seasonal terrestrial habitat use, and overland dispersal. Most often, overland movement events are part of normal turtle movements within a terrestrial home range, but pond turtles regularly overwinter in uplands, burying themselves beneath the leaf litter. Overwintering sites can be as far as 500 meters from typical watercourses on slopes that range from 0 to 35° and in Southern California are typically utilized for only a month or two before turtles return to the water (Holland 1994). In general, males have exhibited larger home ranges than females (Reese 1996). In a study conducted by Reese (1996) on the Trinity River, male linear home ranges averaged approximately 1,141 meters between the mainstem and south fork of the Trinity River, while females averaged approximately 569 meters; thus males were observed by Reese (1996) to have average home ranges twice as large as females.

Pond turtle egg laying occurs from late April through August with a peak period in June to mid-July. Females build nests between 10 to 12 centimeters deep, in dry, well-drained clayey, loamy, or silty soils (Holland 1994, Reese 1996, Spinks et al. 2003, Bettelheim 2005). Females seem to prefer to build nests on slopes less than 15° (Spinks et al. 2003), but have been observed to range up to 60° (Holland 1994). They are built on south- or west-facing slopes, although nests have been known to face west or northwest (Holland 1994, Buskirk 2002, Bettelheim 2005), at distances ranging from 1.5 to 402 m (average = 45 m)

away from water (Holland 1994, Spinks et al. 2003, Bettelheim 2005). Females leave the watercourse in late afternoon and evening, and travel into adjacent wetland margins or uplands to build nests. Most females are believed to oviposit in alternate years, although instances of turtles laying up to two clutches in one year have been recorded in southern and central California (Holland 1994, Ashton et al. 1997, Buskirk 2002, Bettelheim 2005). Once the one to 14 eggs—four to seven eggs on average (Ashton et al. 1997)—are laid in a shallow hole, the female covers it with dirt. Incubating eggs are extremely sensitive to increased soil moisture, which is absorbed by eggs and can subsequently cause them to explode from increased internal pressure (Ashton et al. 1997, Bettelheim 2005). Additionally, nests are highly susceptible to predators as well as to trampling by cattle or people. Hatchlings emerge in approximately 12 weeks.

Hatchling and small juvenile pond turtles require specialized microhabitats characterized by shallow water (usually less than 30 centimeters deep), presence of emergent vegetation, and clusters of small branches in the water. Reese (1996) found that hatchlings and juveniles were more likely to be found in warm, slow-moving portions of river channels (backwater pools, side channels, edgewater pools), ponds, or vernal pools. **Segments in which southwestern pond turtle may occur are described below.**

Segment D (Alternative 1): Unlikely. A population of at least 17 southwestern pond turtles was discovered in Castaic Creek near Castaic Power Plant in fall 2009 and relocated by POWER into Fish Canyon and Cienaga Canyon. While it is possible that the turtles, or others, are again present within this area in Castaic Creek, the proposed ROW is two miles away on the other side of a ridgetop.

Segment G (Alternatives 2, 2a): Present. USGS has identified this species in San Francisquito Canyon during annual surveys in 2002 (USGS 2003), 2003 (USGS 2004), 2007 (USGS 2007), 2009 (USGS 2010), and 2010 (USGS 2011).

ANF Reconductoring: Present. USGS has identified this species in San Francisquito Canyon during annual surveys in 2002 (USGS 2003), 2003 (USGS 2004), 2007 (USGS 2007), 2009 (USGS 2010), and 2010 (USGS 2011).

Segment J (New 230 kV Circuit): Unlikely. A population of at least 17 southwestern pond turtles was identified in fall 2009 in Castaic Creek and subsequently relocated by a POWER biologist upstream into Fish Canyon and Cienaga Canyon. Although this component is within 0.2 mile of Castaic Creek, there is no suitable aquatic habitat within the construction footprint in this area. It is possible that turtles would migrate into the adjacent hillsides for egg-laying and/or overwintering; however, it is more likely that they would utilize the hills north of the creek, as the hills in the construction area—south of the creek—are separated from Castaic Creek by equipment and material staging areas, an employee parking lot, and the Castaic Power Plant itself and its associated electrical components, all of which are areas that have regular or semi-regular human activity.

San Bernardino Ringneck Snake

San Bernardino ringneck snake (*Diadophis punctatus modestus*) is a Forest Service Sensitive species.

It is most commonly found in open, rocky areas, often in somewhat moist microhabitats near intermittent streams. It avoids moving through open or barren areas by restricting movements to areas of surface litter or herbaceous vegetation. **Segments in which San Bernardino ringneck snake may occur are described below.**

Segment G (Alternatives 2, 2a): Possible. Based on reported sightings and the availability of suitable habitat, this species is not expected to occur throughout most of the Project area, with the possible exception of Segment G. Segment G may contain suitable open rocky areas in San Francisquito Canyon west of San Francisquito Canyon Road across from St. Francis Dam reach. The Dam reach may also contain appropriate habitat on its southern end, where there is a very open area with intermittent flow and rocky habitat.

ANF Reconductoring: Possible. Based on reported sightings and the availability of suitable habitat, this species is not expected to occur throughout most of the Project area, with the possible exception of the reconductoring area. This area may contain suitable open rocky areas in San Francisquito Canyon west of San Francisquito Canyon Road across from St. Francis Dam reach. The Dam reach may also contain appropriate habitat on its southern end, where there is a very open area with intermittent flow and rocky habitat.

Coastal Rosy Boa

Coastal rosy boa (*Lichanura trivirgata roseofusca*) is designated by the Regional Forester as a Forest Service Sensitive species, and is a BLM Sensitive species (CDFG 2009).

The coastal rosy boa is primarily associated with rocky habitat in scrub and chaparral, including canyons and washes in more montane habitat (Stephenson and Calcarone 1999, Stebbins 2003, CDFG 2008). It is common in riparian areas, but does not seem to be obligated to permanent water sources (Stebbins 2003, California Herps 2011). It lives in desert and chaparral from the coast to the Mojave and Colorado Deserts. It prefers moderate to dense vegetation and rocky cover, and habitats with a mix of brushy cover and rocky soil such as coastal canyons and hillsides, desert canyons, washes, and mountains. The coastal rosy boa occurs from the foothills of the San Gabriel and San Bernardino Mountains, south through Orange, Riverside, and San Diego Counties.

Coastal rosy boas prefers intermediate temperatures, emerging during dawn, morning, dusk, and at night, but remaining inactive and in a burrow during particularly hot or cold periods. Young are live born during the months of October and November, typically with three to fourteen at a time (Stebbins 2003). Diet consists of small mammals, reptiles, amphibians, and birds. Diet consists of rodents, small birds, lizards, small snakes, and amphibians. **Segments on which coast rosy boa may occur are described below.**

Segment D (Alternative 1): Likely. There are no reported sightings of this species within this segment, but there is suitable desert habitat along the northern half of this segment, which is near the base of the Tehachapi Mountains. The southern half of this segment contains abundant chaparral and is near water sources such as Castaic Lake.

Segment G (Alternatives 2, 2a): Present. This species was identified approximately 0.25 mile from Segment G on an access road to LADWP's Power Plant #1.

Segment 2a (Alternative 2a): Likely. This segment contains abundant chaparral and a perennial stretch of South Portal Creek. This species was identified in summer 2009 on Segment G approximately 2.25 miles from the southern end of this alternative.

Segment I (Alternative 3): Likely. There are no reported sightings of this species within this segment, but there is abundant chaparral along its southern end, with more open areas along its northern end. Water sources are limited. This area is disturbed by Vasquez Canyon Road, Sierra Highway, Elizabeth Lake Road, and various city roads.

ANF Reconductoring: Present. This species was identified approximately 0.25 mile from Segment G on an access road to LADWP's Power Plant #1.

Segment J (New 230 kV Circuit): Present. Based on the presence of suitable habitat this species is likely to occur on the new conducting ROW on Segment J.

Coast (San Diego) Horned Lizard

Coast (San Diego) horned lizard (*Phrynosoma coronatum blainvillii*) is a Forest Service Sensitive species and CDFG Species of Special Concern (CDFG 2009).

It inhabits coastal sage scrub and chaparral in arid and semi-arid climate conditions, preferring friable, rocky, or shallow sandy soils. Open areas with limited overstory are preferred for basking, with abundant and thick shrubs for refuge (Stephenson and Calcarone 1999). Habitat elevation is typically from sea level

to approximately 8,000 feet. Eggs are laid between May and June, and hatch between August and September. Diet consists of mainly ants, but other invertebrates such as spiders, beetles, termites, flies, bees, and grasshoppers are also consumed. Males will typically begin aestivating by the end of July, while females will stay active through the summer to regain body mass following egg-laying, finally aestivating in mid-September (Brown 2009). Hatchlings will stay active into November before beginning aestivation; coast horned lizards are generally not encountered between mid-November and mid-March (Brown 2009).

The coast horned lizard is found generally along the California coastline and partial interior from northern California into Baja California. It has been identified numerous times during surveys within the Project area. **Segments on which coast (San Diego) horned lizard may occur are described below.**

Segment D (Alternative 1): Present. This species has been identified in several CNDDDB records close to the proposed ROW (CDFG 2011). POWER also identified this species along Edison Spring Road in 2010.

Segment G (Alternatives 2, 2a): Present. This species has been identified several times by POWER in San Francisquito Canyon, including one sighting approximately 0.15 mile from the proposed ROW.

Segment 2a (Alternative 2a): Present. This species has been identified several times by POWER close to this segment, including one sighting in San Francisquito Canyon approximately 0.75 mile from the proposed ROW and two sightings along Tule Ridge Road approximately 250 feet from the proposed ROW.

Segment I (Alternative 3): Present. There are reported occurrences of this species within two miles of this segment, which contains suitable habitat in the form of chaparral and sandy streambeds (CDFG 2011).

ANF Reconductoring: Present. This species has been identified several times by POWER in San Francisquito Canyon, including one sighting approximately 150 feet from the existing ROW.

Segment J (New 230 kV Circuit): Present. There is one reported occurrence of this species approximately 0.25 mile from this segment, and another approximately 1.3 miles from the segment (CDFG 2010).

Two-Striped Garter Snake

Two-striped garter snake (*Thamnophis hammondi*) is a Forest Service Sensitive species, BLM Sensitive species, and CDFG Species of Special Concern (CDFG 2009).

It lives in coastal California from the vicinity of Salinas to northwest Baja California, occurring from sea level to approximately 8,000 feet in elevation. It is highly aquatic, found in or near permanent fresh water, often along streams with rocky beds and riparian vegetation (Stebbins 2003). Breeding has been observed to occur in late March and early April, with live birth occurring during the summer (Stebbins 2003, CDFG 2008). Diet consists of tadpoles, newt larvae, small frogs and toads, fish, and sometimes worms and fish eggs (Stebbins 2003).

The two-striped garter snake inhabits perennial and intermittent streams from sea level to around 8,000 feet (Stebbins 2003). They also occupy non-natural aquatic habitats, such as stock ponds (Stephenson and Calcarone 1999). Streams are usually bordered by willows or other types of streamside vegetation (Stebbins 2003). The species inhabits oak woodlands, brushlands, and sparse coniferous forests from Monterey County continuously to Baja California. However, loss of wetlands is partially responsible for a reduction in this species' range (California Herps 2011). Two-striped garter snakes are live-bearing, giving birth to 4 to 36 young in the summer. **Segments on which two-striped garter snake may occur are described below.**

Segment D (Alternative 1): Unlikely. Several individuals were identified approximately three miles from this segment in Fish Canyon by POWER biologists in 2009. This segment contains abundant nearby water sources such as Castaic Lake, but is limited in the amount of perennial streams, if any, that are located under the alignment itself. Open water bodies such as Castaic Lake are mostly separated from the proposed ROW by steep mountain slopes. Habitat is mostly chaparral with patches of coastal sage scrub along the southern half and grassland and desert scrub in the northern half.

Segment G (Alternatives 2, 2a): Likely. There are several areas of perennial water that could support this species around LADWP's Power Plant #1 and in the area directly within or in close proximity to the Project ROW known as Drinkwater Flat.

Segment 2a (Alternative 2a): Likely. There is a perennial stretch of water that could support this species in South Portal Canyon along this alternative, along with abundant chaparral and woodlands.

Segment I (Alternative 3): Possible. There are several sightings from one location within one mile of this segment's centerline (CDFG 2011). The most recent sighting was from 1999, although habitat may still be present and sufficient to support this species at this location, despite being directly adjacent to Elizabeth Lake Road. There is limited water elsewhere along this segment besides the California Aqueduct. Habitat ranges from arid grassland to chaparral.

ANF Reconductoring: Likely. There are several areas of perennial water that could support this species around LADWP's Power Plant #1 and in the area directly within or in close proximity to the Project ROW known as Drinkwater Flat.

Segment J (New 230 kV Circuit): Possible. There are no reported sightings of this species along this segment, which contains mainly chaparral, coastal sage scrub, and annual grassland, along with several intermittent streambeds and two large sources of standing water at Castaic Lake and Castaic Lagoon. Several individuals were identified by POWER approximately three miles upstream of the end of this segment in Fish Canyon.

4.0 EFFECTS OF THE PROPOSED PROJECT

In this section, the construction, operation, and maintenance for the construction of the proposed BRRTP are evaluated to determine if Forest Service listed species within the action area could potentially be affected. Potential effects include temporary disturbance and displacement, loss and fragmentation of habitat, and take of individual animal species. Effects are anticipated to result in both direct and indirect impacts. Direct impacts are those which cause immediate responses such as mortality, habitat loss, and disturbance (resulting in behavioral changes such as flushing and displacement). Indirect impacts are those which cause a protracted response, such as increased foraging time or increased roost tree searching due to habitat reduction and/or habitat degradation. Impacts to FS listed species are considered significant if the following criteria are met:

- Jeopardizing the continued existence of a listed species.
- Loss of individuals of a population of species.
- Adversely modifying critical habitat to the degree it would no longer support the species for which it was designated.
- Violation of any State, federal or other applicable statutes and regulations pertaining to special-status species.
- Adverse impacts to habitat used by special-status species for spawning or rearing.

4.1 EFFECTS ANALYSIS

Each BRRTP component within the ANF is analyzed below for potential direct and indirect effects to listed Forest Service species. The impact analysis does not look at Forest Service listed species or their potential habitat outside the ANF boundaries.

4.1.1 Plants

New 230 kV Transmission Line

Alternative 1 – Construction of the proposed new 230 kV transmission line on *Alternative 1* could potentially directly affect the following Forest Service Sensitive botanical species that could occur within the transmission line corridor:

Present

- Slender mariposa lily
- Short-joint beavertail

Likely

- Plummer's mariposa lily
- Parry's spineflower
- San Gabriel bedstraw
- Ross' pitcher sage
- San Bernardino aster

Possible

- California androsace
- Palmer's mariposa lily
- Alkali mariposa lily
- Late-flowered mariposa lily
- White pygmy poppy

- Mojave Indian paintbrush
- Mojave tarplant
- San Gabriel Mountains dudleya
- Many-stemmed dudleya
- Mesa horkelia
- California satintail
- California black walnut
- Ocellated lily
- Peirson's lupine
- Hall's monardella
- Gairdner's yampah
- Southern jewel flower
- Lemmon's syntrichopappus

Unlikely

- Kusche's sandwort
- San Gabriel manzanita
- Big Bear Valley milk-vetch
- San Gabriel River dudleya
- Fragrant pitcher sage
- Rock monardella
- Baja navarretia
- Rock Creek broomrape
- Southern mountains skullcap
- Parish's checkerbloom
- Laguna Mountains jewel flower

The remaining species that could occur within the ANF, as listed in Table 5, are expected to be absent from the Alternative 1 Project area due to lack of suitable habitat. In terms of impacts to biological plant resources, the only difference between the Alternatives is that a significantly smaller number of populations and individuals of slender mariposa lily and an intermediate number of beavertail cactus would be located within Alternative 1 (19 lilies, 40 cactus) than either Alternatives 2 and 2a (4,801 lilies, 84 cactus) or Alternative 3 (420 lilies, 5 cactus). It is therefore expected that impacts to slender mariposa lilies on Alternative 1 would be less than for Alternatives 2 and 2a or Alternative 3. Impacts to short-joint beavertail may be greater on Alternative 1 than on Alternative 3 but are expected to be less than on Alternatives 2 and 2a.

Direct impacts that could occur include habitat loss or loss of individual plants. Project construction may remove habitat that is suitable to support one or more of these species. Additionally, individual plants may be removed during excavation or ground-disturbing activities, or lost due to foot or vehicular traffic. Because many sections of the access roads along Alternative 1, particularly the Old Ridge Route, are not wide enough to accommodate construction equipment, widening the drivable width of the roads may remove suitable habitat for one or more of these species and/or remove individuals that go undetected during preconstruction botany surveys. Clearing and grading associated with the placement of towers or the grading of new access or spur roads may also result in the alteration of soil conditions, including changes to the topography and drainage of a site such that the capability of the habitat to support special-status species is impaired. Ground disturbance may also have impacts on the seed bank, reducing the amount of native seeds or increasing the amount of non-native seeds if soil is carried between sites by vehicle tires or carriages. Construction on steep hillsides may also result in off-site sediment transport that may bury rare plants in adjacent habitat or alter soil conditions.

Many of the potential indirect effects can be categorized as habitat degradation, which could occur through proliferation of non-native plant species (discussed below under separate title), spread of dust onto vegetation within or adjacent to work areas, and soil compaction, all of which may affect the ability of native plants to survive or occur within affected areas. Construction can also result in the generation of dust due to ground disturbance, excavation, or even vehicular traffic. Dust that settles onto adjacent vegetation may reduce a plant's vigor by affecting its photosynthetic effectiveness. Trampling due to foot or vehicular traffic could result in soil compaction if it occurs repeatedly within any specific area; soil compaction may in turn lead to reduced water absorption and increased runoff, potentially contributing to an increase in non-native plant species, which could be more tolerant of these conditions. The Old Ridge Route is paved and soil compaction would be mostly limited to spur roads, tower sites, or areas where the paved access road may not be wide enough even with vegetation removal from within the road. Edison Spring Road, however, is a dirt road that will undergo soil compaction along its length and will be at greater risk of runoff or sedimentation.

Although Forest Service Sensitive plants were only detected in a few areas of Alternative 1, there is a potential for some species to occur in areas that have not been subject to intense focused surveys or may have failed to germinate even though the rain year was considered adequate to detect annual plants. If any of these species are encountered during pre-construction focused surveys, all individuals or populations within Project disturbance areas would be marked and avoided to the maximum extent possible. However, it is possible that some Forest Service Sensitive plants would be subject to Project disturbance.

While not all the rare plants identified in the Project area would be subject to construction-related disturbance, it is likely that there would be a loss or mortality of some rare plants. Some of these species are more common in the region, and may therefore be less susceptible to loss on a forest-wide level. However, other species, such as Ross' pitcher sage and San Gabriel bedstraw, are of a more limited distribution and may be more susceptible to regional loss. However, as described above, impacts to many of the plant species identified in the Project area could be avoided or reduced if Project minimization measures are implemented.

When impacts to Forest Service Sensitive plant species are unavoidable, the Project mitigation measures require that impacts shall be compensated through reseeded (with locally collected seed stock), or other Forest Service or BLM approved methods. If Project activities result in a significant loss of the known individuals within a Forest Service Sensitive species occurrence to be impacted, and reseeded/transplanting is found to be unfeasible, LADWP shall restore ANF lands with a potential to harbor the impacted species at an appropriate mitigation ratio or preserve existing off-site occupied habitat that is not already part of the public lands in perpetuity at a 2:1 mitigation ratio (habitat preserved: habitat impacted).

LADWP has indicated that GPs, described in Table 1, would be implemented as part of the proposed Project to avoid or minimize impacts to biological resources including rare plant species. These GPs include avoiding or compensating for impacts to unique vegetation communities, training personnel, restricting work to within predetermined limits of construction, implementing erosion Best Management Practices (BMPs), construction monitoring, flagging vegetation for avoidance, and revegetation with appropriate seed mixes. As proposed, the GPs do not provide mitigation ratios, do not specify time for the habitat restoration monitoring, state that only the Regulatory Agencies must be consulted on various issues, and do not specify what elements would be included in a Revegetation Plan. Because the GPs are not considered to be adequate protection for rare plants, the following mitigation measures are presented to further reduce impacts of the proposed Project on sensitive plants: Mitigation Measures AIR-2a (Implement construction fugitive dust control plan), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds into previously uninfested areas in the designated construction right-of-way), BIO-3 (Incorporate riparian area avoidance

and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-13 (Protect special-status plant species and their habitat).

Mitigation Measures for Impacts to Sensitive Plant Species

- AIR-2a Implement construction fugitive dust control plan.** This mitigation measure would require LADWP to prepare and implement a Fugitive Dust Emission Control Plan. (Refer to the Mitigation Planning Section of the EIS/EIR [USFS/BLM/LADWP 2011b] for the full text of this mitigation measure)
- BIO-1 Provide restoration/compensation for impacted sensitive vegetation communities.** This mitigation measure would require LADWP to restore disturbed sites to pre-construction conditions or the desired future conditions per the ANF Land Management Plan. (Refer to Table 2 for the full text of this mitigation measure)
- BIO-2 Prevent the spread of invasive weeds into previously uninfested areas in the designated construction right-of-way.** This mitigation measure would require LADWP to prepare and implement a weed control plan; remove weed seed sources from construction access routes; remove weed seed sources from assembly yards, tower pads, pull sites, landing zones, and spur roads; and use herbicides where necessary to control exotic weeds. (Refer to Table 2 for the full text of this mitigation measure)
- BIO-3 Incorporate riparian area avoidance and mitigation measures.** This mitigation measure would require LADWP seek USFS approval prior to any construction or habitat modification within RCAS; prepare an RCA Treatment Plan in consultation with the USFS; avoid impacts to RCAs to the extent feasible; restore all affected RCAs to their pre-construction conditions; and restore or preserve off-site habitat where permanent RCA impacts are unavoidable. (Refer to Table 2 for the full text of this mitigation measure)
- BIO-4 Provide restoration/compensation for affected jurisdictional areas.** This mitigation measure would require LADWP to avoid impacts to areas under USACE, RWQCB, USFS, or CDFG jurisdiction to the extent feasible and to provide restoration/compensation where applicable. (Refer to Table 2 for the full text of this mitigation measure)
- BIO-6 Implement a Worker Environmental Awareness Program.** This mitigation measure would require a qualified biologist to conduct Worker Environmental Awareness Program (WEAP) training for all crew members. (Refer to Table 2 for the full text of this mitigation measure)
- BIO-13 Protect special-status plant species and their habitat.** This mitigation measure would require LADWP to conduct pre-construction surveys for special-status plant species in the Project vicinity; to flag and avoid all identified individuals; and to restore/compensate for all special-status plants impacted by Project construction. (Refer to Table 2 for the full text of this mitigation measure)

Invasive Plant and Herbicide Use Impacts

The potential introduction or spread of noxious and invasive weeds would occur primarily during construction activities, but would also continue to occur during operation and maintenance phases of the Project. The introduction of noxious and invasive weeds would be related to ground disturbance from clearing and grading, expansion of access roads, construction of spur roads, and road maintenance; the use of vehicles, construction equipment, or earth materials contaminated with non-native plant seed; use of straw bales or wattles that contain seeds of non-native plant species; and enhanced public access to the Project corridor during and after construction. Additionally, weed seeds are often spread on equipment or clothing by construction or maintenance personnel. This would provide many avenues for new propagules (any part of a plant that may generate a new individual plant) to be carried into areas that previously were isolated from sources of noxious weed seeds.

In areas where few exotic species occur, typically the characteristics of the existing topsoil structure, cryptogammic crusts, or the existing native vegetation prevent weed seeds from germinating. Once soil disturbance has occurred, the soil structure or native biotic components are affected such that these factors no longer preclude the establishment of noxious or invasive weeds. Following establishment, new populations of weeds are often extremely difficult to eradicate. It may take several years or decades to re-establish the native soil structure and biota. As many noxious weeds occurring in Southern California are fast-growing plants adapted to high light conditions, removal of canopy vegetation, either in woodlands or in chaparral and scrub habitats, may release weed seeds present in the seed bank from dormancy and allow them to germinate and establish. The spread of invasive plant species could also increase from unauthorized vehicle use. In addition, some roads and potentially drivable terrain that were previously obstructed by vegetation may now be more visible, making them subject to unauthorized off-road vehicle use. Access to these areas threatens the recruitment of native vegetation and promotes the spread of non-native and invasive species. In some cases, the loss of native plant communities could be permanent. This is especially true of climax plant communities that take decades or more to develop, such as pinyon-juniper woodland and Mojave scrub. These areas are at risk of type conversion, especially if non-native and invasive weeds become established.

Direct impacts associated with the introduction of noxious weeds could occur when noxious weeds become established in an area. These invasive plant species can cause a permanent or long-lasting change to the environment by increasing vegetative cover, creating a dense layer that prevents native vegetation from germinating, altering the edaphic and hydrological conditions through nitrogen fixation (as in Spanish broom), or draining the water table (as in giant reed). Noxious weeds can create such an unfavorable environment for wildlife that associate, mutualistic species necessary for native plant life cycles, such as seed dispersers, fossorial mammals, or pollinators, are lost from the area.

Indirect impacts attributed to the colonization of noxious weeds could include a gradual decrease in natural biodiversity as noxious weed infestations may extirpate native plant populations. The lingering effects of herbicide use to remedy noxious weed infestations could adversely impact native plants and wildlife and are discussed in further detail below (Table 7). Ongoing operational and maintenance impacts could include the facilitation of noxious weed establishment and spread as a result of increased vehicular and human traffic.

To reduce Project impacts from the spread or establishment of noxious weeds, LADWP shall implement Mitigation Measures BIO-1 (Provide restoration/ compensation for impacts to native vegetation communities) and BIO-2 (Prepare and implement a Weed Control Plan; Remove weed seed sources from construction routes; and Remove weed seed sources from assembly yards, staging areas, tower pads, pull sites, landing zones, and spur roads). These mitigation measures would minimize the potential spread of noxious weeds as required by Forest Service Manual 2080.

As part of a comprehensive Weed Control Program (BIO-2), several options may be utilized to limit or reduce impacts from invasive plants. To date, several methods exist and are regularly prescribed for the eradication of existing weed populations depending on their location and the habitat type they infest. Some of these include herbicide application, mechanical removal, biocontrol methods, prescribed burns or floods, and shading. The removal of established noxious weed populations is best accomplished by species-specific methodologies, which may include a combination of the above removal procedures or precise timing of specific actions. Due to typically large seed banks and the ability of some weed species to vigorously resprout following removal methods, most species require more than one round of treatment, or require a differing follow-up treatment method after the initial removal occurs.

Noxious weed control measures prescribed as mitigation for Project impacts should be species-specific, and herbicides should be applied only if necessary after considering alternate methods or as part of a proven eradication strategy for that weed species. While the overall benefits of herbicide use are generally

straightforward, herbicide use may have detrimental effects on ecosystem values and functions. There are several exposure scenarios possible for herbicides and wildlife. These include direct spray; indirect contact through grooming or contact with affected vegetation; and ingestion of contaminated media, including vegetation, prey species, and water. However with the measures prescribed as mitigation, the potential for impacts to aquatic fauna would be minimized. For non-target terrestrial plants, the primary hazard is unintended direct spray or spray drift. Offsite drift typically depends on the droplet size and meteorological conditions. Other offsite exposure scenarios for vegetation include percolation, runoff, sediment transport, and wind erosion.

Table 7 contains a list of herbicides, including their potential risks to native vegetation and wildlife, that are proposed for use within the Project area on Forest Service lands. It is important to note that there is an extensive variability related to different types of exposure scenarios and dosages for each herbicide. Furthermore, the effects of certain herbicides can vary exclusively at the species level. Therefore, the information presented in Table 7 is intended as a general overview of the possible effects of herbicide use. Full analyses on the effects of these eight listed herbicides on human and ecological health can be found in the Forest Service Risk Assessment Final Reports (<http://www.fs.fed.us/foresthealth/pesticide/risk.shtml>) and is incorporated by reference.

TABLE 7. GENERAL EFFECTS OF HERBICIDES ON PLANT AND WILDLIFE SPECIES

Herbicide	Effects on Vegetation	Effects on Wildlife
Chlorsulfuron	<ul style="list-style-type: none"> Rate and extent of uptake following foliar application varies by species Inhibits an enzyme that is essential for plant growth 	<ul style="list-style-type: none"> Causes weight loss and decreased body weight gain in experimental mammals Appears to have low toxicity in mammals, birds, fish, and invertebrates
Clopyralid	<ul style="list-style-type: none"> Highly selective toxicity to terrestrial plants (primarily broadleaf species) Relatively non-toxic to aquatic plants and grasses Regulates plant growth by acting as a synthetic auxin, thus altering plant's metabolism and growth characteristics 	<ul style="list-style-type: none"> Appears to be relatively non-toxic to terrestrial or aquatic wildlife May adversely affect liver and kidney weights and gastric epithelial tissue Appears to show no effect on viability of bird eggs and chick immune systems
Dicamba	<ul style="list-style-type: none"> Mimics plant hormone indole-3 acetic acid Mechanism appears to involve a stimulation of ethylene production leading to accumulation of abscisic acid and/or cyanide resulting in abnormal growth 	<ul style="list-style-type: none"> Displays an apparent pattern of interspecies scaling, with smaller animals being less sensitive than larger animals Relatively non-toxic to mammals, fish, and amphibians Acute toxicity to birds appears to be generally low May reduce growth and stunt eye development in pre- and post-hatch birds
Glyphosate	<ul style="list-style-type: none"> Inhibits shikimic acid pathway, effectively blocking synthesis of certain phenolic compounds and aromatic amino acids Inhibits photosynthesis, respiration, and nucleic acid synthesis 	<ul style="list-style-type: none"> May reduce food conversion efficiency leading to loss of body weight in mammals and birds Certain surfactants used with glyphosate are much more toxic to fish than others May cause histological changes in gills, kidneys, and liver of some fish
Hexazinone	<ul style="list-style-type: none"> Inhibits photosynthesis by diverting highly reactive molecules into a chain reaction that destroys chloroplast, cell membranes, and other vital compounds that eventually leads to cell death and ultimately plant destruction Can be used as a pre or post emergent herbicide 	<ul style="list-style-type: none"> Relatively low toxicity to birds and mammals. Slightly toxic to most aquatic animals, including fish, but can be highly toxic to algae and aquatic macrophytes Potential to build up in soil and plant matter and move through food chain if used at very high rates
Imazapyr	<ul style="list-style-type: none"> Inhibits an enzyme that is essential for plant growth Practically non-toxic to conifers 	<ul style="list-style-type: none"> Appears to be relatively non-toxic to terrestrial and aquatic animals
Sulfometuron methyl	<ul style="list-style-type: none"> Blocks cell division in the active growing region of the stem and root tips Can be used as a pre or post emergent 	<ul style="list-style-type: none"> Practically non-toxic to birds Slightly toxic to fish, mostly in the hatch stage Slightly toxic to mammals, but no birth defects or cancer

Herbicide	Effects on Vegetation	Effects on Wildlife
Triclopyr	<ul style="list-style-type: none"> Mimics indole auxin plant growth hormones causing uncontrollable growth At sufficiently high levels of exposure, abnormal growth is so severe that vital functions cannot be maintained and plants die 	<ul style="list-style-type: none"> May cause developmental effects at levels that cause maternal toxicity in mammals May have adverse effect on mammalian kidney functions Higher concentrations may cause mortality or immobility in frog tadpoles Larger doses may cause a decrease in body length and smaller doses may lead to lethargic behavior in some fish Relatively non-toxic to birds

Source: <http://www.fs.fed.us/foresthealth/pesticide/risk.shtml>

The use of herbicides in the Project area would comply with regulations set forth by the U.S. Environmental Protection Agency (EPA) and California Department of Pesticide Regulation (CDPR). Additionally, any herbicide use on NFS lands would be subjected to the review and approval of the appropriate Forest Service personnel. Although overspray may adversely affect some non-target species, the removal of noxious or invasive weeds and the control of existing populations would be considered a beneficial effect. To reduce the effects of herbicides, if used, LADWP would implement Mitigation Measure BIO-2 (Prepare and implement a weed control plan).

Impacts from Native Seed Collecting and Restoration Efforts

Restoration activities may inadvertently lead to negative effects on special-status plant species. For instance, seed collection from common native plants may result in the unintentional trampling of special-status species, should they be present in the area, or in the inadvertent removal or destruction of their seeds. Weed removal activities may lead to species being treated or removed that are not non-native. However, it is unlikely that special-status species would be present in areas of heavy non-native plant cover and may instead be present in areas of predominantly native or mixed native/non-native plant composition. In addition, weeding and seed collection efforts may lead to the unintentional transportation of non-native seed on clothing or weeding materials to areas occupied by special-status plants, potentially creating a new weed infestation. In order to minimize the negative impacts of these restoration activities mitigation measures such as effective preconstruction flagging of sensitive species, required training for field personnel to be familiar with identifying non-native species and/or species that are to be avoided, and washing seeds off of all equipment prior to entering new areas would assist in reducing the likelihood of incidental effects during seed collection or weed removal.

Alternative 2 – Construction of the proposed new 230 kV transmission line on *Alternative 2* could potentially directly affect the following Forest Service Sensitive botanical species that could occur within the transmission line corridor:

Present

- Slender mariposa lily
- Short-joint beavertail

Likely

- Palmer's mariposa lily
- Plummer's mariposa lily
- Alkali mariposa lily
- Parry's spineflower
- Mojave tarplant
- Many-stemmed dudleya
- San Gabriel bedstraw
- Ross' pitcher sage
- San Bernardino aster

Possible

- California androsace
- Kusche's sandwort
- Late-flowered mariposa lily
- San Gabriel Mountains dudleya
- Mesa horkelia
- California satintail
- California black walnut
- Ocellated lily
- Hall's monardella
- Rock Creek broomrape
- Parish's checkerbloom
- Laguna Mountains jewel flower
- Southern jewel flower
- Lemmon's syntrichopappus

Unlikely

- San Gabriel manzanita
- San Gabriel River dudleya
- Fragrant pitcher sage
- Rock monardella
- Baja navarretia
- Gairdner's yampah
- Southern mountains skullcap

The remaining species that could occur within the ANF, as listed in Table 5, are expected to be absent from the Alternative 2 Project area due to lack of suitable habitat. In terms of impacts to biological plant resources, the only difference between the Alternatives is that a significantly greater number of populations and individuals of both slender mariposa lily and beavertail cactus would be located within Alternatives 2 and 2a (4,801 lilies, 84 cactus) than both Alternatives 1 (19 lilies, 40 cactus) and 3 (420 lilies, 5 cactus). During surveys conducted in 2008 and 2010, no special-status plants were identified on Segment 2a, resulting in Alternatives 2 and 2a having the same number of identified special-status plants. It is therefore expected that impacts to these sensitive species would be greater for Alternatives 2 and 2a than for Alternatives 1 and 3.

Direct impacts that could occur include habitat loss or loss of individual plants. Project construction may remove habitat that is suitable to support one or more of these species. Additionally, individual plants may be removed during excavation or ground-disturbing activities, or lost due to foot or vehicular traffic. Ground disturbance may also have impacts on the seed bank, reducing the amount of native seeds or increasing the amount of non-native seeds if soil is carried between sites by vehicle tires or carriages. In April 2009, LADWP conducted unauthorized road grading along approximately five miles of City Highline Motorway Fire Road, which provides access along much of Alternative 2. A byproduct of the grading was that the overall width of the road along this section was increased. While areas used for access within this five-mile portion of the road are not expected to require any road widening for construction access, access and spur roads outside of this area may require widening. This will potentially remove habitat that is suitable for one or more of these species or remove individuals that are undetected during preconstruction surveys. Clearing and grading associated with the placement of towers or the grading of new access or spur roads may also result in the alteration of soil conditions, including changes to the topography and drainage of a site such that the capability of the habitat to support special-status

species is impaired. Construction on steep hillsides may also result in off-site sediment transport that may bury rare plants in adjacent habitat or alter soil conditions.

Many of the potential indirect effects can be categorized as habitat degradation, which could occur through proliferation of non-native plant species, spread of dust onto vegetation within or adjacent to work areas, and soil compaction, all of which may affect the ability of native plants to survive or occur within affected areas. Construction can also result in the generation of dust due to ground disturbance, excavation, or even vehicular traffic. Dust that settles onto adjacent vegetation may reduce a plant's vigor by affecting its photosynthetic effectiveness. Trampling due to foot or vehicular traffic could result in soil compaction if it occurs repeatedly within any specific area; soil compaction may in turn lead to reduced water absorption and increased runoff, potentially contributing to an increase in non-native plant species, which could be more tolerant of these conditions.

Although Forest Service Sensitive plants were only detected in a few areas of Alternative 2, there is a potential for some species to occur in areas that have not been subject to intense focused surveys or may have failed to germinate even though the rain year was considered adequate to detect annual plants. If any of these species are encountered during pre-construction focused surveys, all individuals or populations within Project disturbance areas would be marked and avoided to the maximum extent possible. However, it is possible that some Forest Service Sensitive plants would be subject to Project disturbance.

While not all the rare plants identified in the Project area would be subject to construction-related disturbance, it is likely that there would be a loss or mortality of some rare plants. Some of these species are more common in the region, and may therefore be less susceptible to loss on a forest-wide level. However, other species, such as Ross's pitcher sage and San Gabriel bedstraw, are of a more limited distribution and may be more susceptible to regional loss. However, as described above, impacts to many of the plant species identified in the Project area could be avoided or reduced if Project minimization measures are implemented.

When impacts to Forest Service Sensitive plant species are unavoidable, the Project mitigation measures require that impacts shall be compensated through reseedling (with locally collected seed stock), or other Forest Service or BLM approved methods. If Project activities result in a significant loss of the known individuals within a Forest Service Sensitive species occurrence to be impacted, and reseedling/transplanting is found to be unfeasible, LADWP shall restore ANF lands with a potential to harbor the impacted species at an appropriate mitigation ratio or preserve existing off-site occupied habitat that is not already part of the public lands in perpetuity at a 2:1 mitigation ratio (habitat preserved: habitat impacted).

LADWP has indicated that GPs, described in Table 1, would be implemented as part of the proposed Project to avoid or minimize impacts to biological resources including rare plant species. These GPs include avoiding or compensating for impacts to unique vegetation communities, training personnel, restricting work to within predetermined limits of construction, implementing erosion BMPs, construction monitoring, flagging vegetation for avoidance, and revegetation with appropriate seed mixes. As proposed, the GPs do not provide mitigation ratios, do not specify time for the habitat restoration monitoring, state that only the Regulatory Agencies must be consulted on various issues, and do not specify what elements would be included in a Revegetation Plan. Because the GPs are not considered to be adequate protection for rare plants, the following mitigation measures are presented to further reduce impacts of the proposed Project on sensitive plants: Mitigation Measures AIR-2a (Implement construction fugitive dust control plan), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds into previously uninfested areas in the designated construction right-of-way), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-6 (Implement a Worker

Environmental Awareness Program), and BIO-13 (Protect special-status plant species and their habitat) below. See Alternative 1 for a summary of the text of these mitigation measures.

Invasive Plant and Herbicide Use Impacts

See Alternative 1 for a discussion of invasive plant and herbicide use impacts within the Project area.

Impacts from Native Seed Collecting and Restoration Efforts

See Alternative 1 for a discussion of potential impacts from native seed collecting and restoration efforts.

Alternative 2a – Construction of the proposed new 230 kV transmission line on Alternative 2a could potentially directly affect the following Forest Service Sensitive and federally listed botanical species that could occur within the transmission line corridor. Because Alternative 2a is composed of Segments G and 2a within the ANF, most species' potentials for occurrence are identical along both segments, which mostly parallel each other. Where one species has a different potential to occur on either segment, it is reflected in both categories below with a note for which segment is being referenced.

Present

- Slender mariposa lily (Segment G)
- Short-joint beavertail (Segment G)

Likely

- Slender mariposa lily (Segment 2a)
- Palmer's mariposa lily (Segment G)
- Plummer's mariposa lily (Segment G)
- Alkali mariposa lily
- Parry's spineflower
- Mojave tarplant (Segment G)
- Many-stemmed dudleya (Segment G)
- San Gabriel bedstraw
- Ross' pitcher sage
- Short-joint beavertail (Segment 2a)
- San Bernardino aster (Segment G)

Possible

- California androsace
- Kusche's sandwort
- Palmer's mariposa lily (Segment 2a)
- Plummer's mariposa lily (Segment 2a)
- Late-flowered mariposa lily
- Mojave tarplant (Segment 2a)
- San Gabriel Mountains dudleya (Segment G)
- Many-stemmed dudleya (Segment 2a)
- Urn-flowered alumroot (Segment 2a)
- Mesa horkelia
- California satintail (Segment G)
- California black walnut
- Fragrant pitcher sage (Segment 2a)
- Ocellated lily
- Hall's monardella

- Rock Creek broomrape
- Parish's checkerbloom
- Laguna Mountains jewel flower
- Southern jewel flower
- San Bernardino aster (Segment 2a)
- Lemmon's syntrichopappus

Unlikely

- San Gabriel manzanita
- San Gabriel River dudleya
- San Gabriel Mountains dudleya (Segment 2a)
- California satintail (Segment 2a)
- Fragrant pitcher sage (Segment G)
- Rock monardella
- Baja navarretia
- Gairdner's yampah
- Southern mountains skullcap

The remaining species that could occur within the ANF, as listed in Table 5, are expected to be absent from the Alternative 2a Project area due to absence of suitable habitat. In terms of impacts to biological plant resources, the only difference between the Alternatives is that a significantly greater number of populations and individuals of both slender mariposa lily and beavertail cactus would be located within Alternatives 2 and 2a (4,801 lilies, 84 cactus) than both Alternatives 1 (19 lilies, 40 cactus) and 3 (420 lilies, 5 cactus). During surveys conducted in 2008 and 2010, no special-status plants were identified on Segment 2a, resulting in Alternatives 2 and 2a having the same number of identified special-status plants. It is therefore expected that impacts to these sensitive species would be greater for Alternatives 2 and 2a than for Alternatives 1 and 3.

See botanical analysis for Alternative 2.

Alternative 3 – Construction of the proposed new 230 kV transmission line on Alternative 3 could potentially directly affect the following Forest Service Sensitive and federally listed botanical species that could occur within the transmission line corridor:

Present

- Slender mariposa lily
- Short-joint beavertail

Likely

- Plummer's mariposa lily
- Alkali mariposa lily
- Parry's spineflower
- San Gabriel bedstraw
- Ross' pitcher sage

Possible

- California androsace
- Kusche's sandwort
- Palmer's mariposa lily
- Late-flowered mariposa lily

- White pygmy poppy
- Mojave Indian paintbrush
- Mojave tarplant
- San Gabriel Mountains dudleya
- Many-stemmed dudleya
- Urn-flowered alumroot
- Mesa horkelia
- California satintail
- California black walnut
- Fragrant pitcher sage
- Ocellated lily
- Hall's monardella
- Baja navarretia
- Rock Creek broomrape
- Gairdner's yampah
- Parish's checkerbloom
- Laguna Mountains jewel flower
- Southern jewel flower
- San Bernardino aster
- Lemmon's syntrichopappus

Unlikely

- San Gabriel manzanita
- San Gabriel River dudleya
- Rock monardella
- Southern mountains skullcap

The remaining species that could occur within the ANF, as listed in Table 5, are expected to be absent from the Alternative 3 Project area due to lack of suitable habitat. In terms of impacts to biological plant resources, the only difference between the Alternatives is that an intermediate number of populations and individuals of slender mariposa lily and a smaller number of beavertail cactus would be located within Alternative 3 (420 lilies, 5 cactus) when compared to Alternative 1 (19 lilies, 40 cactus) and Alternatives 2 and 2a (4,801 lilies, 84 cactus). It is therefore expected that impacts to slender mariposa lily would potentially be greater for Alternatives 2 and 2a than for Alternative 3, but less for Alternative 1. Impacts to short-joint beavertail are expected to be less for Alternative 3 than for all other Alternatives.

Direct impacts that could occur include habitat loss or loss of individual plants. Project construction may remove habitat that is suitable to support one or more of these species. Additionally, individual plants may be removed during excavation or ground-disturbing activities, or lost due to foot or vehicular traffic. Ground disturbance may also have impacts on the seed bank, reducing the amount of native seeds or increasing the amount of non-native seeds if soil is carried between sites by vehicle tires or carriages. Clearing and grading associated with the placement of towers or the grading of new access or spur roads may also result in the alteration of soil conditions, including changes to the topography and drainage of a site such that the capability of the habitat to support special-status species is impaired. Construction on steep hillsides may also result in off-site sediment transport that may bury rare plants in adjacent habitat or alter soil conditions.

Many of the potential indirect effects can be categorized as habitat degradation, which could occur through proliferation of non-native plant species, spread of dust onto vegetation within or adjacent to work areas, and soil compaction, all of which may affect the ability of native plants to survive or occur

within affected areas. Because of this ease of transportation, roadsides are often easy for invasive plants to spread into, which also increases the likelihood of seeds becoming attached to passing vehicles and being transported elsewhere. Construction can also result in the generation of dust due to ground disturbance, excavation, or even vehicular traffic. Dust that settles onto adjacent vegetation may reduce a plant's vigor by affecting its photosynthetic effectiveness. Trampling due to foot or vehicular traffic could result in soil compaction if it occurs repeatedly within any specific area; soil compaction may in turn lead to reduced water absorption and increased runoff, potentially contributing to an increase in non-native plant species, which could be more tolerant of these conditions.

Although Forest Service Sensitive plants were only detected in a few areas of Alternative 3, there is a potential for some species to occur in areas that have not been subject to intense focused surveys or may have failed to germinate even though the rain year was considered adequate to detect annual plants. If any of these species are encountered during pre-construction focused surveys, all individuals or populations within Project disturbance areas would be marked and avoided to the maximum extent possible. However, it is possible that some Forest Service Sensitive plants would be subject to Project disturbance.

While not all the rare plants identified in the Project area would be subject to construction-related disturbance, it is likely that there would be a loss or mortality of some rare plants. Some of these species are more common in the region, and may therefore be less susceptible to loss on a forest-wide level. However, other species, such as Ross's pitcher sage and San Gabriel bedstraw, are of a more limited distribution and may be more susceptible to regional loss. However, as described above, impacts to many of the plant species identified in the Project area could be avoided or reduced if Project minimization measures are implemented.

When impacts to Forest Service Sensitive plant species are unavoidable, the Project mitigation measures require that impacts shall be compensated through reseedling (with locally collected seed stock), or other Forest Service or BLM approved methods. If Project activities result in a significant loss of the known individuals within a Forest Service Sensitive species occurrence to be impacted, and reseedling/transplanting is found to be unfeasible, LADWP shall restore ANF lands with a potential to harbor the impacted species at an appropriate mitigation ratio or preserve existing off-site occupied habitat that is not already part of the public lands in perpetuity at a 2:1 mitigation ratio (habitat preserved: habitat impacted).

LADWP has indicated that GPs, described in Table 1, would be implemented as part of the proposed Project to avoid or minimize impacts to biological resources including rare plant species. These GPs include avoiding or compensating for impacts to unique vegetation communities, training personnel, restricting work to within predetermined limits of construction, implementing erosion BMPs, construction monitoring, flagging vegetation for avoidance, and revegetation with appropriate seed mixes. As proposed, the GPs do not provide mitigation ratios, do not specify time for the habitat restoration monitoring, state that only the Regulatory Agencies must be consulted on various issues, and do not specify what elements would be included in a Revegetation Plan. Because the GPs are not considered to be adequate protection for rare plants, the following mitigation measures are presented to further reduce impacts of the proposed Project on sensitive plants: Mitigation Measures AIR-2a (Implement construction fugitive dust control plan), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds into previously uninfested areas in the designated construction right-of-way), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-13 (Protect special-status plant species and their habitat) below.

Invasive Plant and Herbicide Use Impacts

See Alternative 1 for a discussion of invasive plant and herbicide use impacts within the Project area.

Impacts from Native Seed Collecting and Restoration Efforts

See Alternative 1 for a discussion of potential impacts from native seed collecting and restoration efforts.

Reconductoring

The proposed upgrade of the existing BR-RIN would involve approximately 13 miles of NFS lands and four miles of BLM-managed public lands. Reconductoring would occur along Segment G within the ANF. Because the existing transmission line closely parallels the Alternative 2 new transmission line corridor, the potential for species to occur is the same between the existing line and Alternative 2. As such, the impacts to each are expected to be approximately the same, although the reconductoring area may have less ground disturbance because the transmission line and towers are already in place. Alternative 2 is expected to potentially have a greater impact on the southern coast live oak riparian forest community than the existing transmission line due to areas where the two corridors diverge from each other. The reconductoring component would occur regardless of which Project alternative is ultimately chosen for construction, and thus any effects to sensitive plant species that could occur as a result of this component would remain, even if Alternative 2 is not chosen.

New 230 kV Circuit

Addition of the proposed new 230 kV circuit on the existing transmission line to Castaic Power Plant would occur regardless of which alternative is ultimately chosen for construction. Therefore, potential impacts to sensitive plants as a result of this new circuit would not change if Alternative 1 were not chosen. This component could potentially directly affect the following Forest Service Sensitive and federally listed botanical species that could occur within the transmission line corridor:

Present

- Slender mariposa lily
- Short-joint beavertail

Likely

- Plummer's mariposa lily
- Parry's spineflower
- San Gabriel bedstraw
- Ross' pitcher sage

Possible

- California androsace
- Alkali mariposa lily
- Late-flowered mariposa lily
- Mojave tarplant
- San Gabriel Mountains dudleya
- Many-stemmed dudleya
- Mesa horkelia
- California satintail
- California black walnut
- Ocellated lily
- Hall's monardella
- Gairdner's yampah

- Lemmon's syntrichopappus

Unlikely

- Kusche's sandwort
- San Gabriel manzanita
- Palmer's mariposa lily
- San Gabriel River dudleya
- Fragrant pitcher sage
- Rock monardella
- Baja navarretia
- Rock Creek broomrape
- Southern mountains skullcap
- Parish's checkerbloom
- Laguna Mountains jewel flower

The remaining species that could occur within the ANF, as listed in Table 5, are expected to be absent from the new 230 kV circuit Project area due to lack of suitable habitat.

During the 2010 botanical surveys, only two Forest Service Sensitive or listed species were observed along the proposed new 230 kV circuit Project component. This included 13 slender mariposa lilies and nine short-joint beavertails. Other species may have gone unnoticed or there may be additional plants that have established by the time construction begins. Preconstruction surveys should locate most of these plants so that they can be avoided, but in the event that a plant goes unseen, or if construction occurs during a time when plants are not flowering and are not distinguishable, destruction of the plant by grading or excavation is a possibility. Direct effects are expected to be relatively limited because the transmission line and access roads are already in place. However, the degree of direct disturbance to plants will be determined by the condition of access roads, whether it is necessary to replace any towers or supports which may not be able to accommodate the extra conductor, and the placement of potentially large staging areas and pull sites.

Potential direct effects include vegetation loss and partial or complete destruction of special-status plant species that may be present within the ROW. Special-status plants were surveyed for during 2008, 2009 and 2010 botanical surveys; not all special-status plants may have been documented. Trampling by ground crews would likely not kill any plants, but may partially destroy their above-ground biomass. Indirect effects include spread of non-native plant species, increased dust deposition, and soil compaction. Non-native weed seeds may attach to vehicle tires, undercarriages, or elsewhere and can be quickly and easily transported between work areas, where they may fall onto disturbed ground and potentially out-compete native species if they become established. Because of this ease of transportation, roadsides are often easy for invasive plants to spread into, which also increases the likelihood of seeds becoming attached to passing vehicles and being transported elsewhere. Construction can also result in the generation of dust due to ground disturbance, excavation, or even vehicular traffic. Dust that settles onto adjacent vegetation may reduce a plant's vigor by affecting its photosynthetic effectiveness. Trampling due to foot or vehicular traffic could result in soil compaction if it occurs repeatedly within any specific area; soil compaction may in turn lead to reduced water absorption and increased runoff, potentially contributing to an increase in non-native plant species, which could be more tolerant of these conditions.

Operation and Maintenance

Operation and maintenance of the proposed transmission lines and switching stations would occur regardless of which alternative is ultimately chosen for construction and would pose a threat to botanical species. Temporary increased ground disturbance may also have impacts on the seed bank, reducing the amount of native seeds or increasing the amount of non-native seeds if soil is carried between sites by

vehicle tires or carriages. These impacts could be at times localized and temporary and at other times more widespread and permanent. Additionally, individual plants may be removed during ground-disturbing activities or lost due to foot or vehicle traffic.

Invasive Plant and Herbicide Application Impacts

See Alternative 1 for a discussion of potential invasive plant and herbicide impacts.

Impacts from Native Seed Collecting and Restoration Efforts

See Alternative 1 for a discussion of potential impacts due to native seed collecting and restoration activities.

Summary

Of the special-status plants that could occur within the ANF, only two are known to be within the Project corridors: slender mariposa lily and short-joint beavertail; however, protocol-level surveys were not conducted over a significant portion of the Project corridors, due to a lack of Project engineering design, vegetation density and steep terrain. Therefore, the potential exists for numerous other special-status plant species and populations to reside within the Project disturbance boundaries. Consequently, Project construction is expected to result in habitat loss and degradation for all species with potential to occur, although direct mortality or effects to individual plants would be dependent on their presence within work areas and their successful avoidance due to preconstruction surveys and flagging.

Effects Determination

Alternative 1: The new 230 kV transmission line, reconductoring, new 230 kV circuit, and operation and maintenance of the BRRTP **may affect individuals of, but is not likely to result in a trend toward federal listing or loss of viability for**, special-status botanical species.

Alternative 2: The new 230 kV transmission line, reconductoring, new 230 kV circuit, and operation and maintenance of the BRRTP **may affect individuals of, but is not likely to result in a trend toward federal listing or loss of viability for**, special-status botanical species.

Alternative 2a: The new 230 kV transmission line, reconductoring, new 230 kV circuit, and operation and maintenance of the BRRTP **may affect individuals of, but is not likely to result in a trend toward federal listing or loss of viability for**, special-status botanical species.

Alternative 3: The new 230 kV transmission line, reconductoring, new 230 kV circuit, and operation and maintenance of the BRRTP **may affect individuals of, but is not likely to result in a trend toward federal listing or loss of viability for**, special-status botanical species.

4.1.2 Animals

Swainson's Hawk, Peregrine Falcon, and Bald Eagle

New 230 kV Transmission Line

Alternative 1 – There may be direct or indirect effects to Swainson's hawk, peregrine falcon, and bald eagle. Swainson's hawk is expected to have a possibility to occur based on availability of suitable grassland and shrub habitat in the Alternative's northern end. Peregrine falcons are expected to have a possibility of occurring on this alternative due to the abundant open water around Quail Lake, Pyramid Lake, Castaic Lake, and Castaic Lagoon. There are also nesting opportunities for falcons with the buildings and structures around the Castaic Lake/Lagoon region. Bald eagles are expected to have a possibility of occurring on this segment due to the abundant open water around Quail Lake, Pyramid

Lake, Castaic Lake, and Castaic Lagoon. Construction of new towers and grading of new or existing access roads would result in vegetation and habitat loss to these species; however, the restoration plan would require restoration and/or compensation for habitats impacted by this Project. Due to the limited road access, helicopter construction would be used to limit the anticipated impacts to the Swainson's hawk and peregrine falcon's potential habitat. Figure 7, the Helicopter Mitigation Map, illustrates potential locations for helicopter construction.

Direct injury or mortality from construction is not expected based on the lack of recorded sightings of these species. Should any of them nest near the proposed ROW, they may be displaced by construction disturbance depending on the amount of ambient disturbance in the area, which is greater around Neenach and Castaic Lake/Lagoon; however, with implementation of the mitigation measure to protect raptors and migratory birds, this impact would be minimized. If displacement occurs, adults and/or their young would likely need to relocate, which could possibly result in indirect injury or mortality as they move to inhabit new locations. Power line design could result in injury or mortality to raptors that are flying through the area or even perching on the towers, and appropriate tower design and protective measures will need to be enforced to prevent this. Birds, particularly raptors, are also known to perch, roost, or even nest on transmission structures, and may collide with power lines upon landing in or leaving a water body (APLIC 2006). However, this transmission line would be directly adjacent to several other transmission lines, so it is unlikely that the addition of this transmission line would result in a substantial increase in risk to this species from colliding with transmission lines along this alignment.

General practices that would reduce short-term or long-term effects to Swainson's hawk, peregrine falcon, and bald eagle include GP-8, GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to Swainson's hawk and peregrine falcon include HYD-1 (Use of Existing Water Crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds into previously uninfested areas in the designated construction right-of-way), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-8 (Impacts to raptors), BIO-11 (Reduce avian collisions with and electrocutions on transmission lines), and BIO-18 (Protect the bald eagle and golden eagle).

Mitigation Measures for Impacts to Swainson's Hawk, Peregrine Falcon, and Bald Eagle

HYD-1 Use of Existing Water Crossings. This mitigation measure would require the Project to use existing access routes as available; to construct new roads by mowing or crushing vegetation to no less than four inches above grade; to keep new roads to a 12-foot maximum width; to use existing crossings at perennial streams, wetlands, and irrigation channels as feasible; and to restore new access roads that would not be used for ongoing maintenance. (Refer to the Mitigation Planning Section of the EIS/EIR [USFS/BLM/LADWP 2011b] for the full text of this mitigation measure)

BIO-1 Provide restoration/compensation for impacted sensitive vegetation communities. This mitigation measure would require LADWP to restore disturbed sites to pre-construction conditions or the desired future conditions per the ANF Land Management Plan. (Refer to Table 2 for the full text of this mitigation measure)

BIO-2 Prevent the spread of invasive weeds into previously uninfested areas in the designated construction right-of-way. This mitigation measure would require LADWP to prepare and implement a weed control plan; remove weed seed sources from construction access routes; remove weed seed sources from assembly yards, tower pads, pull sites, landing zones, and spur roads; and use herbicides where necessary to control exotic weeds. (Refer to Table 2 for the full text of this mitigation measure)

- BIO-4 Provide restoration/compensation for affected jurisdictional areas.** This mitigation measure would require LADWP to avoid impacts to areas under USACE, RWQCB, Forest Service, or CDFG jurisdiction to the extent feasible and to provide restoration/compensation where applicable. (Refer to Table 2 for the full text of this mitigation measure)
- BIO-5 Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife.** This mitigation measure would require LADWP to conduct preconstruction surveys for special-status species, provide a biological monitor where special-status sign or suitable habitat is identified, and to cover all open trenches or excavations to prevent entrapment of wildlife. (Refer to Table 2 for the full text of this mitigation measure)
- BIO-6 Implement a Worker Environmental Awareness Program.** This mitigation measure would require a qualified biologist to conduct Worker Environmental Awareness Program (WEAP) training for all crew members. (Refer to Table 2 for the full text of this mitigation measure)
- BIO-7 Impacts to Raptors.** This mitigation measure would require LADWP to conduct preconstruction surveys for raptor nests in the Project vicinity; avoid active nests during nesting season where possible; and to consult with BLM, CDFG, Forest Service, and/or USFWS as applicable where active nest avoidance is infeasible or where inactive nests will be removed. (Refer to Table 2 for the full text of this mitigation measure)
- BIO-11 Reduce avian collisions with and electrocutions on transmission lines.** This mitigation measure would require LADWP to implement the latest APLIC guidelines in the design of new Project structures and to develop an Avian Protection Plan for the Project. (Refer to Table 2 for the full text of this mitigation measure)
- BIO-17 Protect the bald eagle and golden eagle.** This mitigation measure would require LADWP to conduct pre-construction surveys for bald or golden eagles within suitable habitat in the Project vicinity if construction is to occur during their breeding seasons; to enforce construction exclusion buffers for ground personnel and helicopters as applicable; and to halt construction if a bald or golden eagle is observed near construction. (Refer to Table 2 for the full text of this mitigation measure)

Alternative 2 – On Segment G, there may be direct or indirect effects to Swainson's hawk or peregrine falcon, both expected to have a possibility of occurring on this segment due to available water sources in San Francisquito Creek and Drinkwater Reservoir (when full) and available nesting habitat on the ledges and boulders along the western edge of San Francisquito Canyon. Swainson's hawks were also identified by POWER biologists above Segment G in 2009, but these were deemed to be most likely migrants. There are also nesting opportunities for falcons with the buildings and structures throughout San Francisquito Canyon, such as power plants, residences, and existing transmission lines. Bald eagle is expected to be absent on this alternative. Construction of new towers and grading of new or existing access roads would result in vegetation and habitat loss to this species; however, the restoration plan would require restoration and/or compensation for habitats impacted by this Project. Direct injury or mortality from construction is not expected based on the lack of recorded sightings, but should any individuals nest near the proposed ROW, they may be displaced by construction disturbance depending on the amount of ambient disturbance in the area, which is greater in the central Green Valley portion of the segment than either the northern (Antelope Valley) and southern (Dry Canyon) portions. If this is the case, adults and/or their young would likely need to relocate, which could possibly result in indirect injury or mortality as they move to inhabit new locations, but implementation of the mitigation measure to protect nesting raptors and migratory birds should minimize this impact by identifying active nests and avoiding construction activities that may negatively impact those nests. Power line design could result in injury or mortality to raptors that are flying through the area or even perching on the towers, and appropriate tower design and protective measures will need to be enforced to prevent this. Birds, particularly raptors, are also known to perch, roost, or even nest on transmission structures, and may collide with power lines upon landing in or leaving a water body (APLIC 2006). However, this transmission line would be directly adjacent to several other transmission lines, so it is unlikely that the

addition of this transmission line would result in a substantial increase in risk to this species from colliding with transmission lines along this alignment.

General practices that would reduce short-term or long-term effects to Swainson's hawk and peregrine falcon include GP-8, GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to Swainson's hawk and peregrine falcon include HYD-1 (Use of Existing Water Crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds into previously uninfested areas in the designated construction right-of-way), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-7 (Impacts to raptors), and BIO-11 (Reduce avian collisions with and electrocutions on transmission lines).

Alternative 2a – On Segment G, there may be direct or indirect effects to Swainson's hawk or peregrine falcon, both expected to have a possibility of occurring on this segment due to available water sources in San Francisquito Creek and Drinkwater Reservoir (when full) and available nesting habitat on the ledges and boulders along the western edge of San Francisquito Canyon. Swainson's hawks were also identified by POWER biologists above Segment G in 2009, but these were deemed to be most likely migrants. There are also nesting opportunities for falcons with the buildings and structures throughout San Francisquito Canyon, such as power plants, residences, and existing transmission lines. Bald eagle is expected to be absent on this alternative. Construction of new towers and grading of new or existing access roads would result in vegetation and habitat loss to this species; however, the restoration plan would require restoration and/or compensation for habitats impacted by this Project. Direct injury or mortality from construction is not expected based on the lack of recorded sightings, but should any individuals nest near the proposed ROW, they may be displaced by construction disturbance depending on the amount of ambient disturbance in the area, which is greater in the central portion of the alternative near the mouth of South Portal Canyon and around Green Valley than either the northern (Antelope Valley) and southern (Dry Canyon) portions. If this is the case, adults and/or their young would likely need to relocate, which could possibly result in indirect injury or mortality as they move to inhabit new locations, but implementation of the mitigation measure to protect nesting raptors and migratory birds should minimize this impact by identifying active nests and avoiding construction activities that may negatively impact those nests. Power line design could result in injury or mortality to raptors that are flying through the area or even perching on the towers, and appropriate tower design and protective measures will need to be enforced to prevent this. Birds, particularly raptors, are also known to perch, roost, or even nest on transmission structures, and may collide with power lines upon landing in or leaving a water body (APLIC 2006). However, this transmission line would be directly adjacent to several other transmission lines, so it is unlikely that the addition of this transmission line would result in a substantial increase in risk to this species from colliding with transmission lines along this alignment.

General practices that would reduce short-term or long-term effects to Swainson's hawk and peregrine falcon include GP-8, GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to Swainson's hawk and peregrine falcon include HYD-1 (Use of Existing Water Crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds into previously uninfested areas in the designated construction right-of-way), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-7 (Impacts to raptors), and BIO-11 (Reduce avian collisions with and electrocutions on transmission lines).

Alternative 3 – Under Segment I, there may be direct or indirect effects to Swainson's hawk and peregrine falcon. Swainson's hawk is expected to have a possibility to occur based on the presence of poor-quality grassland in the upper end of the segment combined with nesting habitat on existing towers and some pockets of trees around residences, and presence of the California Aqueduct through the segment, while peregrine falcon is expected to be unlikely to occur based on the limited availability of nesting and aquatic habitat for this species. Bald eagle is expected to be absent on this alternative. Construction of new towers and grading of new or existing access roads would result in foraging habitat loss to this species; however, the restoration plan would require restoration and/or compensation for habitats impacted by this Project. Direct injury or mortality from construction is not expected based on the lack of recorded sightings, but should any hawks nest near the proposed ROW, they may be displaced by construction disturbance. If this is the case, adults and/or their young would likely need to relocate, which could possibly result in indirect injury or mortality as they move to inhabit new locations, but implementation of the mitigation measure to protect nesting raptors and migratory birds should minimize this impact by identifying active nests and avoiding construction activities that may negatively impact those nests. Power line design could result in injury or mortality to Swainson's hawks that are flying through the area or even perching on the towers, and appropriate tower design and protective measures will need to be enforced to prevent this. Birds, particularly raptors, are also known to perch, roost, or even nest on transmission structures (APLIC 2006). However, this transmission line would be directly adjacent to several other transmission lines, so it is unlikely that the addition of this transmission line would result in a substantial increase in risk to this species from colliding with transmission lines along this alignment.

General practices that would reduce short-term or long-term effects to Swainson's hawk and peregrine falcon include GP-8, GP-38, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to Swainson's hawk and peregrine falcon include HYD-1 (Use of Existing Water Crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds into previously uninfested areas in the designated construction right-of-way), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-8 (Impacts to raptors), and BIO-11 (Reduce avian collisions with and electrocutions on transmission lines).

Reconductoring

Reconductoring would occur along Segments A, B, G, and K. Segment G within the ANF is analyzed in detail above for the Swainson's hawk and peregrine falcon under Alternatives 2 and 2a. Bald eagle is not expected to occur on either of these alternatives. Potential risks to these species as a result of reconductoring the existing transmission line would be a factor regardless of which alternative is ultimately chosen for construction, as this is a required component of BRRTTP.

New 230 kV Circuit

Addition of the proposed new 230 kV circuit on the existing transmission line to Castaic Power Plant may result in direct or indirect effects to peregrine falcon or bald eagle. Both species are expected to have possibilities of occurring on this segment due to the abundant open water around Castaic Lake and Castaic Lagoon. There are also nesting opportunities for falcons with the buildings and structures around the Castaic Lake/Lagoon region. Grading of new or existing access roads would result in vegetation and habitat loss to this species; however, the restoration plan would require restoration and/or compensation for habitats impacted by this project. Direct injury or mortality from construction is not expected based on the lack of recorded sightings of this species. Should any individuals nest near the proposed ROW, they may be displaced by construction disturbance depending on the amount of ambient disturbance in the area, which is greater around Castaic Lake/Lagoon. If this is the case, adults and/or their young would likely need to relocate, which could possibly result in indirect injury or mortality as they move to inhabit

new locations, but implementation of the mitigation measure to protect nesting raptors and migratory birds should minimize this impact by identifying active nests and avoiding construction activities that may negatively impact those nests. Addition of an additional circuit on the power line could result in injury or mortality to raptors that are flying through the area or even perching on the towers, and appropriate protective measures will need to be enforced to prevent this. Birds, particularly raptors, are known to perch, roost, or even nest on transmission structures, and may collide with power lines upon landing in or leaving a water body (APLIC 2006). However, this transmission line is pre-existing and is directly adjacent to another transmission line, so it is unlikely that the addition of this single circuit would result in a substantial increase in risk to this species from colliding with transmission lines along this alignment. Potential risks to peregrine falcon or bald eagle as a result of the addition of this new circuit would be a factor regardless of which alternative is ultimately chosen for construction, as this is a required component of BRRTP.

Operation and Maintenance

Operation and maintenance of the proposed transmission lines and would pose minimal threats to the Swainson's hawk, peregrine falcon, and bald eagle. Ground and air monitoring of the lines would be limited in potential habitat along the transmission lines during the nesting and breeding season. Temporary increased human presence, noise, and dust may occur and may result in negligible impacts. Occasional road grading in the ROW on access roads and spur roads as required for safe vehicular access would not affect these species. During emergency operations, temporary disturbance may occur but would be minimized through emergency operation procedures, such as briefing crews on sensitive animal procedures, and minimized operations in sensitive habitats, as conditions permit. Potential risks to these species as a result of BRRTP operation and maintenance requirements would be a factor regardless of which alternative is ultimately chosen for construction, as this is a required element of BRRTP..

Effects Determination

Alternative 1: The new 230 kV transmission line, reconductoring, new 230 kV circuit, and operation and maintenance of the BRRTP **may affect individuals of, but is not likely to result in a trend toward federal listing or loss of viability for**, the Swainson's hawk, peregrine falcon, or bald eagle. The new 230 kV circuit would have **no effect** on Swainson's hawk. The reconductoring would have **no effect** on the bald eagle.

Alternative 2: The new 230 kV transmission line, reconductoring, new 230 kV circuit, and operation and maintenance of the BRRTP **may affect individuals of, but is not likely to result in a trend toward federal listing or loss of viability for**, the Swainson's hawk, peregrine falcon, or bald eagle. The new 230 kV circuit would have **no effect** on Swainson's hawk. The new 230 kV transmission line and reconductoring would have **no effect** on bald eagle.

Alternative 2a: The new 230 kV transmission line, reconductoring, new 230 kV circuit, and operation and maintenance of the BRRTP **may affect individuals of, but is not likely to result in a trend toward federal listing or loss of viability for**, the Swainson's hawk, peregrine falcon, or bald eagle. The new 230 kV circuit would have **no effect** on Swainson's hawk. The new 230 kV transmission line and reconductoring would have **no effect** on bald eagle.

Alternative 3: The new 230 kV transmission line, reconductoring, new 230 kV circuit, and operation and maintenance of the BRRTP **may affect individuals of, but is not likely to result in a trend toward federal listing or loss of viability for**, the Swainson's hawk, peregrine falcon, or bald eagle. The new 230 kV circuit would have **no effect** on Swainson's hawk. The new 230 kV transmission line and reconductoring would have **no effect** on bald eagle.

California Spotted Owl

New 230 kV Transmission Line

Alternative 1 – Along Segment D, there may be direct or indirect effects to California spotted owl, expected to be unlikely to occur due to limited potential habitat (POWER 2009b, POWER 2010d). There are no reported occurrences along this segment. During the 2008 and 2009 surveys, eight nesting and potential foraging habitat locations were identified and focused surveys were conducted at three of these, with the rest determined to be of too poor habitat to survey. However, no individuals were detected during this two-year survey.

Due to the limited road access, helicopter construction would be used to limit the anticipated impacts to potential spotted owl habitat. Figure 7, the Helicopter Mitigation Map, illustrates potential locations for helicopter construction. Implementation of Forest Plan Standard S20 would restrict construction within 0.25 mile of any California spotted owl nest site or activity center with an unknown nesting status during the breeding season (February 1 – August 15) unless Forest Service protocol surveys determine that spotted owls are absent. This would reduce impacts to nesting California spotted owls and their young. This standard is implemented into mitigation measure BIO-19 (Protect California spotted owl).

General practices that would reduce short-term or long-term effects to California spotted owl include GP-8, GP-24, GP-25, GP-41, GP-42, GP-43, GP-48, GP-49, and GP-56. Mitigation measures that would reduce short-term or long-term effects to California spotted owl include AIR-2a (Implement construction fugitive dust control plan), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds into previously uninfested areas in the designated construction right-of-way), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-8 (Avoid nesting season and limit disturbance of nesting birds [non-raptor species]), BIO-11 (Reduce avian collisions with and electrocutions on transmission lines), and BIO-19 (Protect California spotted owl).

Mitigation Measures for Impacts to California Spotted Owl

- AIR-2a Implement construction fugitive dust control plan.** This mitigation measure would require LADWP to prepare and implement a Fugitive Dust Emission Control Plan. (Refer to the Mitigation Planning Section of the EIS/EIR [USFS/BLM/LADWP 2011b] for the full text of this mitigation measure)
- BIO-2 Prevent the spread of invasive weeds into previously uninfested areas in the designated construction right-of-way.** This mitigation measure would require LADWP to prepare and implement a weed control plan; remove weed seed sources from construction access routes; remove weed seed sources from assembly yards, tower pads, pull sites, landing zones, and spur roads; and use herbicides where necessary to control exotic weeds. (Refer to Table 2 for the full text of this mitigation measure)
- BIO-5 Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife.** This mitigation measure would require LADWP to conduct preconstruction surveys for special-status species, provide a biological monitor where special-status sign or suitable habitat is identified, and to cover all open trenches or excavations to prevent entrapment of wildlife. (Refer to Table 2 for the full text of this mitigation measure)
- BIO-6 Implement a Worker Environmental Awareness Program.** This mitigation measure would require a qualified biologist to conduct Worker Environmental Awareness Program (WEAP) training for all crew members. (Refer to Table 2 for the full text of this mitigation measure)
- BIO-8 Avoid nesting season and limit disturbance of nesting birds (non-raptor species).** This mitigation measure would require LADWP to conduct pre-construction surveys for non-raptor nests in the Project vicinity; avoid active nests during nesting season where possible; and to consult with BLM, CDFG, Forest Service, and/or USFWS as applicable where active nest

avoidance is infeasible or where inactive nests will be removed. (Refer to Table 2 for the full text of this mitigation measure)

BIO-11 Reduce avian collisions with and electrocutions on transmission lines. This mitigation measure would require LADWP to implement the latest APLIC guidelines in the design of new Project structures and to develop an Avian Protection Plan for the Project. (Refer to Table 2 for the full text of this mitigation measure)

BIO-19 Protect California spotted owl. This mitigation measure would require LADWP to conduct FS protocol surveys for the California spotted owl prior to construction within any suitable habitat and to avoid all construction or helicopter activity in the vicinity of any identified nests or active pairs between February 1 and August 15 or until chicks have fledged. (Refer to Table 2 for the full text of this mitigation measure)

Alternative 2 – Under Segment G, there may be direct or indirect effects to California spotted owl, expected to have a possibility of occurring due to availability of suitable habitat in Baird Canyon, Craig Spring, Clearwater Canyon, San Francisquito Canyon, Grass Mountain, Pettinger Canyon, and Spunky Canyon as determined during 2008 and 2009 surveys (POWER 2009b, POWER 2010d). Habitat degradation and/or loss will occur for this species on this segment, as many of the areas that were determined to be suitable habitat during surveys are directly within the survey corridor. Depending on specific and final tower locations, these may be able to be spanned over or avoided. However, they may be impacted by construction if they cannot be avoided, such as by tree trimming where necessary for equipment access. This could, by extension, lead to injury or mortality of any spotted owls that may be present in the affected trees. Habitat loss and/or degradation may also make suitable California spotted owl habitat less attractive for future use by this species, potentially requiring individuals to find and/or utilize new habitat patches. Construction during nesting season may cause owls to leave the area entirely if they become too distressed by the activity, which could in turn lead to harm if owls are pushed into areas that are unfamiliar or unsuitable for them. Implementation of Forest Plan Standard S20 would restrict construction within 0.25 mile of any California spotted owl nest site or activity center with an unknown nesting status during the breeding season (February 1 – August 15) unless Forest Service protocol surveys determine that spotted owls are absent. This would reduce impacts to nesting California spotted owls and their young. This standard is implemented into mitigation measure BIO-19 (Protect California spotted owl). Dust will likely be a factor from construction, and will without proper use of a water truck or equivalent mechanism have the potential to drift onto adjacent vegetation, degrading its quality.

General practices that would reduce short-term or long-term effects to California spotted owl include GP-8, GP-24, GP-25, GP-41, GP-42, GP-43, GP-48, GP-49, and GP-56. Mitigation measures that would reduce short-term or long-term effects to California spotted owl include AIR-2a (Implement construction fugitive dust control plan), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds into previously uninfested areas in the designated construction right-of-way), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-8 (Avoid nesting season and limit disturbance of nesting birds [non-raptor species]), BIO-11 (Reduce avian collisions with and electrocutions on transmission lines), and BIO-19 (Protect California spotted owl).

Alternative 2a – Under Segments G and 2a, there may be direct or indirect effects to California spotted owl, expected to have a possibility of occurring due to availability of suitable habitat in Baird Canyon, Craig Spring, Clearwater Canyon, San Francisquito Canyon, Grass Mountain, Pettinger Canyon, Spunky Canyon, and South Portal Canyon as determined during 2008 and 2009 surveys (POWER 2009b, POWER 2010d). Due to the limited road access along Segment 2a, helicopter construction would be used to limit the anticipated impacts to the California spotted owl within this area. Figure 7, the Helicopter Mitigation Map, illustrates potential locations for helicopter construction. If woodland areas need to be

crossed, branch trimming would likely be required to allow equipment to pass. This could lead to injury or mortality of any spotted owls that may be present in the affected trees. Habitat loss and/or degradation may also make suitable California spotted owl habitat less attractive for future use by this species, potentially requiring individuals to find and/or utilize new habitat patches. During spotted owl surveys conducted for BR RTP, suitable habitat was located along the southernmost 1.75 miles of South Portal Canyon. The new transmission line would be 0.25 mile from the bottom of the main canyon at its closest point and 0.55 mile at its farthest point. Along with the potential for any birds that may be present to be affected by the construction noise, there is also the potential for runoff from the construction to wash down side drainages and into the main South Portal Canyon streambed, particularly following heavy rain events. This would degrade habitat and potentially stress individual birds that may be present in the canyon. Direct habitat loss would depend on the potential for any direct access into South Portal Canyon, which is not expected because the proposed corridor in this area runs alongside the top of Tule Ridge for most of its course. Construction during nesting season may cause owls to leave the area entirely if they become too distressed by the activity, which could in turn lead to harm if owls are pushed into areas that are unfamiliar or unsuitable for them. Implementation of Forest Plan Standard S20 would restrict construction within 0.25 mile of any California spotted owl nest site or activity center with an unknown nesting status during the breeding season (February 1 – August 15) unless Forest Service protocol surveys determine that spotted owls are absent. This would reduce impacts to nesting California spotted owls and their young. This standard is implemented into mitigation measure BIO-19 (Protect California spotted owl).

General practices that would reduce short-term or long-term effects to California spotted owl include GP-8, GP-24, GP-25, GP-41, GP-42, GP-43, GP-48, GP-49, and GP-56. Mitigation measures that would reduce short-term or long-term effects to California spotted owl include AIR-2a (Implement construction fugitive dust control plan), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds into previously uninfested areas in the designated construction right-of-way), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-8 (Avoid nesting season and limit disturbance of nesting birds [non-raptor species]), BIO-11 (Reduce avian collisions with and electrocutions on transmission lines), and BIO-19 (Protect California spotted owl).

Reconductoring

Reconductoring would occur along Segments A, B, G, and K. Segment G is analyzed in detail for the California spotted owl under the Alternative 2 and Alternative 2a sections. Potential risks to this species as a result of reconductoring the existing transmission line would be a factor regardless of which alternative is ultimately chosen for construction, as this is a required component of BR RTP.

New 230 kV Circuit

Addition of the new 230 kV circuit to the existing transmission line may result in direct or indirect effects to California spotted owl, expected to have a possibility of occurring due to availability of suitable habitat in Charlie Canyon and Dry Canyon as determined during 2008 and 2009 surveys (POWER 2009b, POWER 2010d). Habitat degradation and/or loss would occur for this species in Charlie Canyon, as the areas that were determined to be suitable habitat during surveys are located alongside the road, possibly resulting in dust deposition and/or branch trimming of trees along this area. This could lead to injury or mortality of any spotted owls that may be present in the affected trees. Habitat loss and/or degradation may also make suitable California spotted owl habitat less attractive for future use by this species, potentially requiring individuals to find and/or utilize new habitat patches. Construction during nesting season may cause owls to leave the area entirely if they become too distressed by the activity, which could in turn lead to harm if owls are pushed into areas that are unfamiliar or unsuitable for them. Implementation of Forest Plan Standard S20 would restrict construction within 0.25 mile of any

California spotted owl nest site or activity center with an unknown nesting status during the breeding season (February 1 – August 15) unless Forest Service protocol surveys determine that spotted owls are absent. This would reduce impacts to nesting California spotted owls and their young. This standard is implemented into mitigation measure BIO-19 (Protect California spotted owl). Potential risks to this species as a result of adding a new conductor to the existing transmission line would be a factor regardless of which alternative is ultimately chosen for construction, as this is a required component of BR RTP.

Operation and Maintenance

Operation and maintenance of the proposed transmission lines could pose a threat to the California spotted owl. Ground and air monitoring of the lines would be limited in potential habitat during the nesting and breeding season. Temporary increased human presence, noise, and dust may occur and may result in negligible impacts. Occasional road grading in the ROW on access roads and spur roads as required for safe vehicular access would not affect this species unless it results in unintentional damage to trees or other California spotted owl habitat or if it interferes with California spotted owl daily activities. During emergency operations, temporary disturbance may occur but would be minimized through emergency operation procedures such as briefing crews on sensitive animal procedures and minimized operations in sensitive habitats, as conditions permit. Operation and maintenance of the BR RTP would likely cause minimal impacts to the species, as ongoing maintenance is currently being conducted along the new 230 kV circuit and the reconductoring component within the existing ROW and would cause short-term temporary impacts. Potential risks to this species as a result of operations and maintenance of the BR RTP would be a factor regardless of which alternative is ultimately chosen for construction, as this is a required component of BR RTP.

Effects Determination

Alternative 1: The new 230 kV transmission line, reconductoring, new 230 kV circuit, and operation and maintenance of the BR RTP would have **no effect** on the California spotted owl.

Alternative 2: The new 230 kV transmission line, reconductoring, new 230 kV circuit, and operation and maintenance of the BR RTP **may affect individuals of, but is not likely to result in a trend toward federal listing or loss of viability for**, the California spotted owl.

Alternative 2a: The new 230 kV transmission line, reconductoring, new 230 kV circuit, and operation and maintenance of the BR RTP **may affect individuals of, but is not likely to result in a trend toward federal listing or loss of viability for**, the California spotted owl.

Alternative 3: The new 230 kV transmission line, reconductoring, new 230 kV circuit, and operation and maintenance of the BR RTP would have **no effect** on the California spotted owl.

Bat Species (Pallid Bat, Townsend's Big-eared Bat, and Western Red Bat)

New 230 kV Transmission Line

Alternative 1 – There may be direct or indirect construction impacts to pallid bat, Townsend's big-eared bat, and western red bat. All three species are expected to be likely to occur based on the availability of suitable habitat on Segment D, such as rocky areas for roosting in the mountainous region of the segment, along with riparian habitat and chaparral for foraging throughout this same area. Tower construction and grading of new or existing access roads will result in loss of foraging habitat and degradation in habitat quality, although tower construction may provide some additional roosting habitat. Pallid bats and Townsend's big-eared bats in particular are sensitive to human disturbance, and construction during summer months when activity is higher may cause a greater degree of disturbance to the bats, potentially leading to their abandonment of the area (Vaughan and O'Shea 1976, Piaggio 2005). Areas of suitable habitat within this segment are not heavily visited by people. Thus, abandonment can indirectly lead to

injury or mortality if it results in encounters with equipment or in decreased fitness at a new location due to unfamiliarity. The bats would likely return to the same roost the following season if it were still available (B. Doering personal communication 2011). Mating for pallid bats occurs from October to February, birth from April to July, and final weaning in August; mating in Townsend's big-eared bats generally occurs between October and February, with birth between May and July; and mating in western red bats occurs in late summer or early fall with birth the following summer (Reid 2006). Construction during certain time periods of these windows may be more disturbing to some bat species than others, if present.

Should a bat roost be disturbed by construction, complete abandonment of the roost may result, particularly for more sensitive species like pallid bats or Townsend's big-eared bats. This may lead to complete nesting failure for the season, resulting in a loss of that year's new bat births. Disruption of hibernation is unlikely given the generally warm winters in Southern California. McNab (1974) suggests that only bats that are both small and do not cluster in groups can hibernate when the environmental temperature is above 14°C (57.2°F). Pallid bats may roost alone or in groups from two to several hundred and, although they will hibernate in cold parts of their range, they overwinter in coastal California (Rambaldini 2005). They have been reported to remain active at temperatures between -5°C (23°F) and 10°C (50°F). Townsend's big-eared bats may hibernate in groups of single individuals to several hundred; in some areas, mainly in the eastern U.S., they may hibernate in groups up to several thousand (Piaggio 2005). Although winter behavior of western red bats is not well understood, it is possible that they also do not hibernate for long periods, as this species has been reported to be found foraging during the winter on warm days, even in northern California (Bolster 2005). It is likely that bats in the Project area would periodically enter states of torpor but would generally remain relatively active compared to bats in colder parts of the country, where hibernation is more feasible.

General practices that would reduce short- or long-term effects to special-status bat species include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, GP-49, and GP-56. Mitigation measures that would reduce short- or long-term effects to special-status bat species include HYD-1 (Use of Existing Water Crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds into previously uninfested areas in the designated construction right-of-way), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-21 (Protect sensitive bat species).

Mitigation Measures for Impacts to Bat Species

HYD-1 Use of Existing Water Crossings. This mitigation measure would require the Project to use existing access routes as available; to construct new roads by mowing or crushing vegetation to no less than four inches above grade; to keep new roads to a 12-foot maximum width; to use existing crossings at perennial streams, wetlands, and irrigation channels as feasible; and to restore new access roads that would not be used for ongoing maintenance. (Refer to the Mitigation Planning Section of the EIS/EIR [USFS/BLM/LADWP 2011b] for the full text of this mitigation measure)

BIO-1 Provide restoration/compensation for impacted sensitive vegetation communities. This mitigation measure would require LADWP to restore disturbed sites to pre-construction conditions or the desired future conditions per the ANF Land Management Plan. (Refer to Table 2 for the full text of this mitigation measure)

BIO-2 Prevent the spread of invasive weeds into previously uninfested areas in the designated construction right-of-way. This mitigation measure would require LADWP to prepare and implement a weed control plan; remove weed seed sources from construction access routes; remove weed seed sources from assembly yards, tower pads, pull sites, landing zones, and spur roads; and use herbicides where necessary to control exotic weeds. (Refer to the Mitigation Planning Section for the full text of this mitigation measure.)

- BIO-4 Provide restoration/compensation for affected jurisdictional areas.** This mitigation measure would require LADWP to avoid impacts to areas under USACE, RWQCB, Forest Service, or CDFG jurisdiction to the maximum extent feasible and to provide restoration/compensation where applicable. (Refer to the Mitigation Planning Section for the full text of this mitigation measure.)
- BIO-5 Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife.** This mitigation measure would require LADWP to conduct preconstruction surveys for special-status species, provide a biological monitor where special-status sign or suitable habitat is identified, and to cover all open trenches or excavations to prevent entrapment of wildlife. (Refer to the Mitigation Planning Section for the full text of this mitigation measure.)
- BIO-6 Implement a Worker Environmental Awareness Program.** This mitigation measure would require a qualified biologist to conduct Worker Environmental Awareness Program (WEAP) training for all crew members. (Refer to the Mitigation Planning Section for the full text of this mitigation measure.)
- BIO-21 Protect sensitive bat species.** This mitigation measure would require LADWP to conduct surveys for special-status bat species in the Project vicinity prior to construction and during the maternity season; to avoid active maternity roosts or hibernacula as feasible; to provide substitute roosting habitat when maternity roosts will be disturbed by Project construction; and to evict all bats prior to any destruction of roosts; to survey for bat nursery colonies. (Refer to the Mitigation Planning Section for the full text of this mitigation measure.)

Alternative 2 – Under Segment G, there may be direct or indirect construction impacts to pallid bat, Townsend's big-eared bat, and western red bat. All three species are expected to be likely to occur based on the availability of suitable habitat on Segment G, such as rocky areas for roosting on the western side of San Francisquito Canyon; water in San Francisquito Canyon, Dry Canyon, and Drinkwater Reservoir; and foraging habitat in the shrubs and grassland throughout the alignment. Tower construction and grading of new or existing access roads will result in loss of foraging habitat and degradation in habitat quality, although tower construction may provide some additional roosting habitat. Pallid bats and Townsend's big-eared bats in particular are sensitive to human disturbance, and construction during summer months when activity is higher may cause a greater degree of disturbance to the bats, potentially leading to their abandonment of the area (Vaughan and O'Shea 1976, Piaggio 2005). This can indirectly lead to injury or mortality if it results in encounters with equipment or in decreased fitness at a new location due to unfamiliarity. The bats would likely return to the same roost the following season if it were still available (B. Doering personal communication 2011). Mating for pallid bats occurs from October to February, birth from April to July, and final weaning in August; mating in Townsend's big-eared bats generally occurs between October and February, with birth between May and July; and mating in western red bats occurs in late summer or early fall with birth the following summer (Reid 2006). Construction during certain time periods of these windows may be more disturbing to some bat species than others, if present.

Should a bat roost be disturbed by construction, it may result in complete abandonment of the roost, particularly for more sensitive species like pallid bats or Townsend's big-eared bats. This may lead to complete nesting failure for the season, resulting in a loss of that year's new bat births. Disruption of hibernation is unlikely, given the generally warm winters in Southern California. McNab (1974) suggests that only bats that are both small and do not cluster in groups can hibernate when the environmental temperature is above 14°C (57.2°F). Pallid bats may roost alone or in groups from two to several hundred and, although they will hibernate in cold parts of their range, they overwinter in coastal California (Rambaldini 2005). They have been reported to remain active at temperatures between -5°C (23°F) and 10°C (50°F). Townsend's big-eared bats may hibernate in groups of single individuals to several hundred; in some areas, mainly in the eastern U.S., they may hibernate in groups up to several thousand (Piaggio 2005). Although winter behavior of western red bats is not well understood, it is possible that they also do

not hibernate for long periods, as this species has been reported to be found foraging during the winter on warm days, even in northern California (Bolster 2005). It is likely that bats in the Project area would periodically enter states of torpor but would generally remain relatively active compared to bats in colder parts of the country, where hibernation is more feasible.

General practices that would reduce short- or long-term effects to special-status bat species include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, GP-49, and GP-56. Mitigation measures that would reduce short- or long-term effects to special-status bat species include HYD-1 (Use of Existing Water Crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds into previously uninfested areas in the designated construction right-of-way), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-21 (Protect sensitive bat species).

Alternative 2a – Under Segments G and 2a, there may be direct or indirect construction impacts to pallid bat, Townsend's big-eared bat, and western red bat. All three species are expected to be likely to occur based on the availability of suitable habitat on Alternative 2a, such as rocky areas for roosting on the western side of San Francisquito Canyon; water in San Francisquito Canyon, Dry Canyon, South Portal Canyon, and Drinkwater Reservoir; and foraging habitat in the shrubs and grassland throughout the alignment. Tower construction and grading of new or existing access roads on Segment G will result in loss of foraging habitat and degradation in habitat quality, although tower construction may provide some additional roosting habitat. There is little suitable habitat directly under the transmission line within the South Portal Canyon area, but there is more abundant habitat for roosting and foraging at the canyon bottom within the streambed area. Because bats are mainly nocturnal, construction on the ridge in Segment 2a during the day is unlikely to disturb them. Pallid bats and Townsend's big-eared bats in particular are sensitive to human disturbance, and construction during summer months when activity is higher may cause a greater degree of disturbance to the bats, potentially leading to their abandonment of the area (Vaughan and O'Shea 1976, Piaggio 2005). This can indirectly lead to injury or mortality if it results in encounters with equipment or in decreased fitness at a new location due to unfamiliarity. The bats would likely return to the same roost the following season if it were still available (B. Doering personal communication 2011). Mating for pallid bats occurs from October to February, birth from April to July, and final weaning in August; mating in Townsend's big-eared bats generally occurs between October and February, with birth between May and July; and mating in western red bats occurs in late summer or early fall with birth the following summer (Reid 2006). Construction during certain time periods of these windows may be more disturbing to some bat species than others, if present.

Should a bat roost be disturbed by construction, it may result in complete abandonment of the roost, particularly for more sensitive species like pallid bats or Townsend's big-eared bats. This may lead to complete nesting failure for the season, resulting in a loss of that year's new bat births. Disruption of hibernation is unlikely, given the generally warm winters in Southern California. McNab (1974) suggests that only bats that are both small and do not cluster in groups can hibernate when the environmental temperature is above 14°C (57.2°F). Pallid bats may roost alone or in groups from two to several hundred and, although they will hibernate in cold parts of their range, they overwinter in coastal California (Rambaldini 2005). They have been reported to remain active at temperatures between -5°C (23°F) and 10°C (50°F). Townsend's big-eared bats may hibernate in groups of single individuals to several hundred; in some areas, mainly in the eastern U.S., they may hibernate in groups up to several thousand (Piaggio 2005). Although winter behavior of western red bats is not well understood, it is possible that they also do not hibernate for long periods, as this species has been reported to be found foraging during the winter on warm days, even in northern California (Bolster 2005). It is likely that bats in the Project area would periodically enter states of torpor but would generally remain relatively active compared to bats in colder parts of the country, where hibernation is more feasible.

General practices that would reduce short- or long-term effects to special-status bat species include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, GP-49, and GP-56. Mitigation measures that would reduce short- or long-term effects to special-status bat species include HYD-1 (Use of Existing Water Crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds into previously uninfested areas in the designated construction right-of-way), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-21 (Protect sensitive bat species).

Alternative 3 – Under Segment I, there may be direct or indirect construction impacts to pallid bat, Townsend's big-eared bat, and western red bat. All three species are expected to be likely to occur based on the availability of suitable habitat on Segment I, such as rocky areas for roosting in the mountainous region of the segment, along with riparian habitat and chaparral for foraging throughout this same area. Tower construction and grading of new or existing access roads will result in loss of foraging habitat and degradation in habitat quality, although tower construction may provide additional roosting habitat for the western mastiff bat. Pallid bats and Townsend's big-eared bats in particular are sensitive to human disturbance, and construction during summer months when activity is higher may cause a greater degree of disturbance to the bats, potentially leading to their abandonment of the area (Vaughan and O'Shea 1976, Piaggio 2005). Areas of suitable habitat within this segment are not heavily visited by people. Thus, abandonment can indirectly lead to injury or mortality if it results in encounters with equipment or in decreased fitness at a new location due to unfamiliarity. The bats would likely return to the same roost the following season, if it were still available (B. Doering personal communication 2011). Mating for pallid bats occurs from October to February, birth from April to July, and final weaning in August; mating in Townsend's big-eared bats generally occurs between October and February, with birth between May and July; mating in western mastiff bats typically begins in early March with birth ending in September; and mating in western red bats occurs in late summer or early fall with birth the following summer (Reid 2006). Construction during certain time periods of these windows may be more disturbing to some bat species than others, if present.

Should a bat roost be disturbed by construction, it may result in complete abandonment of the roost, particularly for more sensitive species like pallid bats or Townsend's big-eared bats. This may lead to complete nesting failure for the season, resulting in a loss of that year's new bat births. Disruption of hibernation is unlikely given the generally warm winters in Southern California. McNab (1974) suggests that only bats that are both small and do not cluster in groups can hibernate when the environmental temperature is above 14°C (57.2°F). Pallid bats may roost alone or in groups from two to several hundred and although they will hibernate in cold parts of their range, they overwinter in coastal California (Rambaldini 2005). They have been reported to remain active at temperatures between -5°C (23°F) and 10°C (50°F). Townsend's big-eared bats may hibernate in groups of single individuals to several hundred; in some areas, mainly in the eastern U.S., they may hibernate in groups up to several thousand (Piaggio 2005). Although winter behavior of western red bats is not well understood, it is possible that they also do not hibernate for long periods, as this species has been reported to be found foraging during the winter on warm days, even in northern California (Bolster 2005). It is likely that bats in the Project area would periodically enter states of torpor but would generally remain relatively active compared to bats in colder parts of the country, where hibernation is more feasible.

General practices that would reduce short- or long-term effects to special-status bat species include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, GP-49, and GP-56. Mitigation measures that would reduce short- or long-term effects to special-status bat species include HYD-1 (Use of Existing Water Crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds into previously uninfested areas in the designated construction right-of-way), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction

activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-21 (Protect sensitive bat species).

Reconductoring

Reconductoring would occur along Segments A, B, G, and K. Segment G is analyzed in detail for pallid bat, Townsend's big-eared bat, and western red bat impacts in the preceding sections under Alternatives 2 and 2a. Potential risks to these species as a result of reconductoring the existing transmission line would be a factor regardless of which alternative is ultimately chosen for construction, as this is a required component of BR RTP.

New 230 kV Circuit

Construction work on the new 230 kV circuit is not expected to notably reduce suitable habitat for the bat species named above. Foraging habitat may be degraded as a result of the spread of non-native species, dust deposition, or soil compaction, but habitat effects are expected to be relatively low due to the probable low amount of disturbance that will result from adding the additional conductor to the existing transmission lines. Should spur roads need to be constructed or reestablished, there may be habitat loss or degradation in isolated locations. Rocky roosting habitat is minimal along this area. Although the western side of San Francisquito Canyon has rocky habitat, this is primarily several miles north of this corridor. The few buildings located directly under or adjacent to this ROW are primarily homes in San Francisquito Canyon, and the likelihood of bats roosting in them is low; if bats are present, temporary construction effects would likely not be significantly more disturbing than daily residential activity. However, if bats are present roosting around the building or yard that are approximately two linear miles south of the northern end of this corridor, which are not public areas, there may be a greater disturbance from construction presence on nearby towers, potentially causing bats to vacate the area. Potential risks to these species as a result of adding a new conductor to the existing transmission line would be a factor regardless of which alternative is ultimately chosen for construction, as this is a required component of BR RTP.

Operation and Maintenance

Operation and maintenance of the proposed transmission lines pose minimal threat to pallid bat, Townsend's big-eared bat, and western red bat. Ground and air monitoring of the lines would be limited in potential habitat along the transmission line corridors during the nesting and breeding season. Temporary increased human presence, noise, and dust may occur and result in negligible impacts. Occasional road grading in the ROW on access roads and spur roads as required for safe vehicular access may affect these species if they are roosting very close nearby, potentially causing arousals or temporary abandonments. During emergency operations temporary disturbance may occur but would be minimized through emergency operation procedures, such as briefing crews on sensitive animal procedures, and minimized operations in sensitive habitats as conditions permit. Potential risks to these species as a result of operation and maintenance activities for the BR RTP would be a factor regardless of which alternative is ultimately chosen for construction, as this is a required component of BR RTP.

Effects Determination

Alternative 1: The new 230 kV transmission line, reconductoring, new 230 kV circuit, and operation and maintenance of the BR RTP **may affect individuals of, but is not likely to result in a trend toward federal listing or loss of viability for**, the pallid bat, Townsend's big-eared bat, and western red bat.

Alternative 2: The new 230 kV transmission line, reconductoring, new 230 kV circuit, and operation and maintenance of the BR RTP **may affect individuals of, but is not likely to result in a trend toward federal listing or loss of viability for**, the pallid bat, Townsend's big-eared bat, and western red bat.

Alternative 2a: The new 230 kV transmission line, reconductoring, new 230 kV circuit, and operation and maintenance of the BRRTP **may affect individuals of, but is not likely to result in a trend toward federal listing or loss of viability for**, the pallid bat, Townsend's big-eared bat, and western red bat.

Alternative 3: The new 230 kV transmission line, reconductoring, new 230 kV circuit, and operation and maintenance of the BRRTP **may affect individuals of, but is not likely to result in a trend toward federal listing or loss of viability for**, the pallid bat, Townsend's big-eared bat, and western red bat.

Tehachapi Pocket Mouse

New 230 kV Transmission Line

Alternative 1 – There may be direct or indirect construction impacts to Tehachapi pocket mouse, expected to be unlikely to occur on Segment D. There are nine occurrences from the CNDDDB within ten miles of the ANF in the Alternative 1 vicinity; however, most of these are greater than ten years old and/or extirpated (CNDDDB 2011). Of those which are extant, only three are within five miles of the ANF boundary, the most recent of which is 1974. Tower construction and grading of new or existing access roads would result in habitat loss, resulting in a decrease in food availability for this species and possibly an increase in predation risk due to reduced vegetation cover. Preconstruction surveys would identify any burrows in the area, but for burrows which are dug under shrubs, they may be difficult to see, leaving a possibility that burrows would go unnoticed. These burrows may be crushed during construction, resulting in possible injury or death to one or more individuals and a reduction in suitable hiding places. Individuals may be scared out of burrows if they are near construction, which may result in injury or mortality by construction or predation. Furthermore, any excavations that are conducted and left open during the day or overnight would pose a risk to any Tehachapi pocket mice in the area which may fall into them. Should any individuals be present in the work area, they would likely be unaccustomed to human presence due to the lack of human activity in along the northwest portion of the ANF in the Ridge Route/Edison Spring Road area. There is currently a relative lack of information known about the ecology of the Tehachapi pocket mouse. It is believed that it is nocturnal and that it hibernates seasonally. It may also enter periods of inactivity when the ambient temperature is exceptionally high or low such as in summer or winter, respectively (CDFG 2008). Because of this, this species may be less likely to be disturbed by construction.

General practices that would reduce short- or long-term effects to Tehachapi pocket mouse include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short- or long-term effects to Tehachapi pocket mouse include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of Existing Water Crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds into previously uninfested areas in the designated construction right-of-way), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-20 (Protect American badger, Mohave ground squirrel, Tehachapi pocket mouse, and kit fox).

Mitigation Measures for Impacts to Tehachapi Pocket Mouse

AIR-2a Implement construction fugitive dust control plan. This mitigation measure would require LADWP to prepare and implement a Fugitive Dust Emission Control Plan. (Refer to the Mitigation Planning Section of the EIS/EIR [USFS/BLM/LADWP 2011b] for the full text of this mitigation measure)

HYD-1 Use of Existing Water Crossings. This mitigation measure would require the Project to use existing access routes as available; to construct new roads by mowing or crushing vegetation to no less than four inches above grade; to keep new roads to a 12-foot maximum width; to use existing crossings at perennial streams, wetlands, and irrigation channels as feasible; and to restore new access roads that would not be used for ongoing maintenance. (Refer to the

Mitigation Planning Section of the EIS/EIR [USFS/BLM/LADWP 2011b] for the full text of this mitigation measure)

- BIO-1 Provide restoration/compensation for impacted sensitive vegetation communities.** This mitigation measure would require LADWP to restore disturbed sites to pre-construction conditions or the desired future conditions per the ANF Land Management Plan. (Refer to Table 2 for the full text of this mitigation measure)
- BIO-2 Prevent the spread of invasive weeds into previously uninfested areas in the designated construction right-of-way.** This mitigation measure would require LADWP to prepare and implement a weed control plan; remove weed seed sources from construction access routes; remove weed seed sources from assembly yards, tower pads, pull sites, landing zones, and spur roads; and use herbicides where necessary to control exotic weeds. (Refer to the Mitigation Planning Section for the full text of this mitigation measure.)
- BIO-5 Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife.** This mitigation measure would require LADWP to conduct preconstruction surveys for special-status species, provide a biological monitor where special-status sign or suitable habitat is identified, and to cover all open trenches or excavations to prevent entrapment of wildlife. (Refer to the Mitigation Planning Section for the full text of this mitigation measure.)
- BIO-6 Implement a Worker Environmental Awareness Program.** This mitigation measure would require a qualified biologist to conduct Worker Environmental Awareness Program (WEAP) training for all crew members. (Refer to the Mitigation Planning Section for the full text of this mitigation measure.)
- BIO-20 Protect American badger, Mohave ground squirrel, Tehachapi pocket mouse, and kit fox.** This mitigation measure would require LADWP to conduct preconstruction surveys for American badger, Mohave ground squirrel, Tehachapi pocket mouse, and desert kit fox and to avoid occupied habitat where possible. (Refer to the Mitigation Planning Section for the full text of this mitigation measure.)

Alternative 2 – There may be direct or indirect construction impacts to Tehachapi pocket mouse, expected to have a possibility of occurring along Segment G based on availability of suitable habitat and on historical occurrences in the Lake Hughes and Elizabeth Lake areas (CDFG 2011). Tower construction and grading of new or existing access roads would result in habitat loss, resulting in a decrease in food availability for this species and possibly an increase in predation risk due to reduced vegetation cover. Preconstruction surveys would identify any burrows in the area, but for burrows which are dug under shrubs, they may be difficult to see, leaving a possibility that burrows would go unnoticed. These burrows may be crushed during construction, resulting in possible injury or death to one or more individuals and a reduction in suitable hiding places. Individuals may be scared out of burrows if they are near construction, which may result in injury or mortality by construction or predation. Furthermore, any excavations that are conducted and left open during the day or overnight would pose a risk to any Tehachapi pocket mice in the area which may fall into them. Should any individuals be present in the work area, they may be relatively accustomed to human presence due to the human activity in the Elizabeth Lake and Green Valley areas. There is currently a relative lack of information known about the ecology of the Tehachapi pocket mouse. It is believed that it is nocturnal and that it hibernates seasonally. It may also enter periods of inactivity when the ambient temperature is exceptionally high or low such as in summer or winter, respectively (CDFG 2008). Because of this, this species may be less likely to be disturbed by construction.

General practices that would reduce short- or long-term effects to Tehachapi pocket mouse include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short- or long-term effects to Tehachapi pocket mouse include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of Existing Water Crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds into previously

uninfested areas in the designated construction right-of-way), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-20 (Protect American badger, Mohave ground squirrel, Tehachapi pocket mouse, and kit fox).

Alternative 2a – There may be direct or indirect construction impacts to Tehachapi pocket mouse, expected to have a possibility of occurring along Segments G and 2a based on availability of suitable habitat and on historical occurrences in the Lake Hughes and Elizabeth Lake areas (CDFG 2011). Tower construction and grading of new or existing access roads would result in habitat loss, resulting in a decrease in food availability for this species and possibly an increase in predation risk due to reduced vegetation cover. Preconstruction surveys would identify any burrows in the area, but for burrows which are dug under shrubs, they may be difficult to see, leaving a possibility that burrows would go unnoticed. These burrows may be crushed during construction, resulting in possible injury or death to one or more individuals and a reduction in suitable hiding places. Individuals may be scared out of burrows if they are near construction, which may result in injury or mortality by construction or predation. Furthermore, any excavations that are conducted and left open during the day or overnight would pose a risk to any Tehachapi pocket mice in the area which may fall into them. Should any individuals be present in the work area, they may be relatively accustomed to human presence due to the human activity in the Elizabeth Lake and Green Valley areas. There is currently a relative lack of information known about the ecology of the Tehachapi pocket mouse. It is believed that it is nocturnal and that it hibernates seasonally. It may also enter periods of inactivity when the ambient temperature is exceptionally high or low such as in summer or winter, respectively (CDFG 2008). Because of this, this species may be less likely to be disturbed by construction.

General practices that would reduce short- or long-term effects to Tehachapi pocket mouse include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short- or long-term effects to Tehachapi pocket mouse include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of Existing Water Crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds into previously uninfested areas in the designated construction right-of-way), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-20 (Protect American badger, Mohave ground squirrel, Tehachapi pocket mouse, and kit fox).

ANF Reconductoring

Reconductoring would occur along Segments A, B, G, and K. Segment G is analyzed in detail for the Tehachapi pocket mouse under the Alternative 2 and Alternative 2a sections. Potential risks to this species as a result of reconductoring the existing transmission line would be a factor regardless of which alternative is ultimately chosen for construction, as this is a required component of BR RTP.

Operations and Maintenance

Operation and maintenance of the proposed transmission lines could pose a threat to the Tehachapi pocket mouse. Ground monitoring of the lines may minimally impact potential habitat, but air monitoring would have no effect. Temporary increased dust may occur and result in negligible impacts. Occasional road grading in the ROW on access roads and spur roads as required for safe vehicular access may affect this species if it is present in the roadway or if its burrows are in an area that is impacted by the grading activity. This may result in injury to individual pocket mice or to damage to burrows. During emergency operations, temporary disturbance may occur but would be minimized through emergency operation procedures, such as briefing crews on sensitive animal procedures, and minimized operations in sensitive habitats, as conditions permit. Operation and maintenance of the BR RTP would have no effect on the Tehachapi pocket mouse. Operation and maintenance is a required component of BR RTP and would

occur regardless of which alternative is ultimately chosen for construction.

Effects Determination

Alternative 1: The new 230 kV transmission line and reconductoring of the BRRTP **may affect individuals of, but is not likely to result in a trend toward federal listing or loss of viability** for the Tehachapi pocket mouse. Construction of the new 230 kV circuit and operation and maintenance of the transmission line would have **no effect** on this species.

Alternative 2: The new 230 kV transmission line and reconductoring of the BRRTP **may affect individuals of, but is not likely to result in a trend toward federal listing or loss of viability** for the Tehachapi pocket mouse. Construction of the new 230 kV circuit and operation and maintenance of the transmission line would have **no effect** on this species.

Alternative 2a: The new 230 kV transmission line and reconductoring of the BRRTP **may affect individuals of, but is not likely to result in a trend toward federal listing or loss of viability** for the Tehachapi pocket mouse. Construction of the new 230 kV circuit and operation and maintenance of the transmission line would have **no effect** on this species.

Alternative 3: The new 230 kV transmission line, reconductoring, new 230 kV circuit, and operation and maintenance of the BRRTP would have **no effect** on the Tehachapi pocket mouse.

Arroyo Chub

New 230 kV Transmission Line

Alternative 1 – There are no reported sightings along Segment D, but there are isolated spots of appropriate sandy stream bottoms which will have to be crossed for access. However, these areas are believed to be dry most of the year based on 2008 and 2009 surveys and the streams along this alternative likely do not support a population of the fish.

General practices that would reduce short-term and long-term effects to arroyo chub and its habitat include GP-3, GP-5, GP-11, GP-12, GP-17, GP-19, GP-24, GP-34, GP-35, GP-38, GP-41, GP-42, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short-term or long-term effects to arroyo chub and its habitat include HYD-01 (Use of Existing Water Crossings), HYD-02 (New Road Construction Over Waterways), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), and BIO-6 (Implement a Worker Environmental Awareness Program).

Mitigation Measures for Effects to Arroyo Chub

HYD-1 Use of Existing Water Crossings. This mitigation measure would require the Project to use existing access routes as available; to construct new roads by mowing or crushing vegetation to no less than four inches above grade; to keep new roads to a 12-foot maximum width; to use existing crossings at perennial streams, wetlands, and irrigation channels as feasible; and to restore new access roads that would not be used for ongoing maintenance. (Refer to the Mitigation Planning Section of the EIS/EIR [USFS/BLM/LADWP 2011b] for the full text of this mitigation measure)

HYD-2 New Road Construction Over Waterways. This mitigation measure would require roads to be built as near as possible to right angles to streams and washes if feasible; to install culverts where necessary; to minimize disturbance to vegetation and streambeds; to utilize dust control measures during construction; and to leave existing roads in a condition equal to or better than their

preconstruction conditions. (Refer to the Mitigation Planning Section of the EIS/EIR [USFS/BLM/LADWP 2011b] for the full text of this mitigation measure)

- BIO-2 Prevent the spread of invasive weeds into previously uninfested areas in the designated construction right-of-way.** This mitigation measure would require LADWP to prepare and implement a weed control plan; remove weed seed sources from construction access routes; remove weed seed sources from assembly yards, tower pads, pull sites, landing zones, and spur roads; and use herbicides where necessary to control exotic weeds. (Refer to the Mitigation Planning Section for the full text of this mitigation measure.)
- BIO-3 Incorporate riparian area avoidance and mitigation measures.** This mitigation measure would require LADWP seek USFS approval prior to any construction or habitat modification within RCAs; prepare an RCA Treatment Plan in consultation with the USFS; avoid impacts to RCAs to the extent feasible; restore all affected RCAs to their pre-construction conditions; and restore or preserve off-site habitat where permanent RCA impacts are unavoidable. (Refer to Table 2 for the full text of this mitigation measure)
- BIO-4 Provide restoration/compensation for affected jurisdictional areas.** This mitigation measure would require LADWP to avoid impacts to areas under USACE, RWQCB, USFS, or CDFG jurisdiction to the extent feasible and to provide restoration/compensation where applicable. (Refer to Table 2 for the full text of this mitigation measure)
- BIO-5 Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife.** This mitigation measure would require LADWP to conduct preconstruction surveys for special-status species, provide a biological monitor where special-status sign or suitable habitat is identified, and to cover all open trenches or excavations to prevent entrapment of wildlife. (Refer to Table 2 for the full text of this mitigation measure)
- BIO-6 Implement a Worker Environmental Awareness Program.** This mitigation measure would require a qualified biologist to conduct Worker Environmental Awareness Program (WEAP) training for all crew members. (Refer to Table 2 for the full text of this mitigation measure)

Alternative 2 – There may be direct or indirect impacts to the arroyo chub, expected to have a possibility of occurring within the proposed *Alternative 2* corridor based on its known presence within the Drinkwater and/or Dam Reaches of San Francisquito Creek over the last decade (USGS 2002, USGS 2003, USGS 2004, USGS 2005a, USGS 2005b, USGS 2007, USGS 2008, USGS 2010, USGS 2011). However, upstream of this isolated portion, San Francisquito Creek is not known to be perennial until north of Bee Canyon. The area between Bee Canyon and the known population is intermittent and has been observed to be dry most of the year. The ANF Land Management Plan (USFS 2005c) considers this species to be present within San Francisquito Creek, although it is unclear if it is believed or known to be present anywhere in San Francisquito Creek upstream of Forest Road 5N27. Direct impacts to this species could include crushing or disruption of life history during construction by vehicles or equipment in stream crossings at Bee Canyon, should it be present, along with habitat degradation. Project equipment and vehicles could spill vehicular fluids into the water or could carry non-native plant seeds in their tires or on their carriages, potentially resulting in the spread of non-native plant species if the seeds fall off and propagate in new areas, such as suitable arroyo chub habitat. Repeated stream crossings may also disrupt or destroy suitable breeding or spawning habitat.

A watershed analysis was also conducted for BRRTP (BRRTP Water Resources Technical Report 2011). The purpose of this analysis was not to calculate a precise quantity of sediment delivered to catchments within the study area, but to use the predicted volumes of soil loss to qualitatively compare the erosional effects of each BRRTP *Alternative* route within the ANF. It is important to note that the predicted rates of erosion do not reflect the amount of sediment that would be transported out of the watersheds; rather, the predicted values are an estimate of erosion that would occur as a result of construction and operation of the BRRTP. In actuality, much of the sediment eroded from construction areas and roads would be redeposited before leaving the watershed. In addition, due to the scale of this analysis, the predicted post-

Project erosion values do not reflect implementation of General Practices or mitigation measures and represent a worst-case scenario.

As part of this analysis, two tests were run. The first was a Revised Universal Soil Loss Equation, Version 2 (RUSLE), selected to predict annual erosion from Project-related ground disturbance. The RUSLE model predicts long-term average soil loss expressed in tons per acre per year. For analysis of erosion resulting from the Project, road construction or improvement of existing roads at least five miles from the ROW were included in this analysis. Once baseline values were estimated, the change in annual erosion rates (tons/acre/year) was estimated for each subwatershed as a result of construction of the transmission line routes for each Alternative (e.g., vegetation clearing related to road construction). Using these results, the increase of erosion from baseline conditions was calculated. The Alternative 2 transmission line would result in an erosion increase of 1.18 percent over baseline. The second test was a WinTR-55 statistical analysis, used to determine what effect, if any, Project-related ground disturbance would have on watershed hydrology. Due to the comparatively large size of the watersheds, a relative approach was utilized to determine effects of BRRTP Alternatives on watershed hydrology. Rather than delineating and modeling all watersheds in the BRRTP area, a representative sample of smaller subwatersheds was selected, in collaboration with the ANF, to provide a representative sample of the varied characteristic of the area watersheds. If little or no change were determined in these subwatersheds, then it could be logically assumed that similar percentages of change (*i.e.*, post-construction changes from baseline) would occur in similar subwatersheds with similar Project-related impacts. If, however, the model produced significant differences between pre- and post-construction conditions, modeling of the remaining subwatersheds would be required to quantify impacts. In the analysis of the Lake Elizabeth subwatershed, which was estimated to be representative of all watersheds affected by Alternative 2, the difference between pre- and post-construction hydrology was not statistically significant. Therefore it is expected that hydrological changes to the San Francisquito Canyon watershed as a result of Alternative 2 construction would also not be statistically significant between pre- and post-construction conditions.

General practices that would reduce short-term and long-term effects to arroyo chub and its habitat include GP-3, GP-5, GP-11, GP-12, GP-17, GP-19, GP-24, GP-34, GP-35, GP-38, GP-41, GP-42, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short-term or long-term effects to arroyo chub and its habitat include HYD-01 (Use of Existing Water Crossings), HYD-02 (New Road Construction Over Waterways), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), and BIO-6 (Implement a Worker Environmental Awareness Program).

Alternative 2a – There may be direct or indirect impacts to the arroyo chub, expected to have a possibility of occurring within the proposed Alternative 2a corridor based on its known presence within the Drinkwater and/or Dam Reaches of San Francisquito Creek over the last decade (USGS 2002, USGS 2003, USGS 2004, USGS 2005a, USGS 2005b, USGS 2007, USGS 2008, USGS 2010, USGS 2011). However, upstream of this isolated portion, San Francisquito Creek is not known to be perennial until north of Bee Canyon. The area between Bee Canyon and the known population is intermittent and has been observed to be dry most of the year. There are no known occurrences within the Segment 2a portion of the Alternative 2a. The ANF Land Management Plan (USFS 2005c) considers this species to be present within San Francisquito Creek, although it is unclear if it is believed or known to be present anywhere in San Francisquito Creek upstream of Forest Road 5N27. Direct impacts to this species could include crushing or disruption of life history during construction by vehicles or equipment in stream crossings at Bee Canyon, should it be present, along with habitat degradation. Project equipment and vehicles could spill vehicular fluids into the water or could carry non-native plant seeds in their tires or on their carriages, potentially resulting in the spread of non-native plant species if the seeds fall off and

propagate in new areas, such as suitable arroyo chub habitat. Repeated stream crossings may also disrupt or destroy suitable breeding or spawning habitat.

A watershed analysis was also conducted for BR RTP (BR RTP Water Resources Technical Report 2011). See the above summary of the analysis described under Alternative 2 for the results. Results would be applicable to both Alternatives 2 and 2a.

General practices that would reduce short-term and long-term effects to arroyo chub and its habitat include GP-3, GP-5, GP-11, GP-12, GP-17, GP-19, GP-24, GP-34, GP-35, GP-38, GP-41, GP-42, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short-term or long-term effects to arroyo chub and its habitat include HYD-01 (Use of Existing Water Crossings), HYD-02 (New Road Construction Over Waterways), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), and BIO-6 (Implement a Worker Environmental Awareness Program).

Alternative 3 – There are no reported sightings of this species along Segment I, which contains several miles of potentially suitable habitat within Vasquez Canyon and alongside Sierra Highway. However, these streambeds were not observed to be flowing during any of the various surveys which were conducted in 2008 and 2009 for this Project, and may not be able to support a population if there are no perennial water sources. Arroyo chub is expected to be unlikely to occur along Segment I. Indirect impacts to arroyo chub could occur due to runoff from Project equipment passing over stream crossings just upstream of Vasquez Canyon.

General practices that would reduce short-term and long-term effects to arroyo chub and its habitat include GP-3, GP-5, GP-11, GP-12, GP-17, GP-19, GP-24, GP-34, GP-35, GP-38, GP-41, GP-42, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short-term or long-term effects to arroyo chub and its habitat include HYD-01 (Use of Existing Water Crossings), HYD-02 (New Road Construction Over Waterways), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), and BIO-6 (Implement a Worker Environmental Awareness Program).

Reconductoring

Reconductoring would occur along Segments A, B, G, and K. Segment G is analyzed in detail for the arroyo chub under the Alternatives 2 and 2a sections. This species is not known to occur along Segments A, B, or K. Potential risks to this species as a result of reconductoring the existing transmission line would be a factor regardless of which alternative is ultimately chosen for construction, as this is a required component of BR RTP.

New 230 kV Circuit

There are no reported sightings of this species along this corridor, which passes over Dry Canyon, San Francisquito Canyon, Charlie Canyon, and Bitter Canyon. None of these canyons has perennially flowing water at the point that the power lines pass over. The ANF Land Management Plan (USFS 2005c) considers this species to be present within San Francisquito Creek, although it is unclear if it is believed or known to be present in San Francisquito Creek at the point that this Project component crosses the creek. Direct impacts to this species could include crushing or disruption of life history during construction by vehicles or equipment in stream crossings, should it be present. Indirect impacts to arroyo chub could include habitat degradation. This could occur due to runoff from Project equipment passing

over stream crossings just upstream of suitable habitat. Additionally, Project equipment and vehicles could carry non-native plant seeds in their tires or on their carriages, potentially resulting in the spread of non-native plant species if the seeds fall off and propagate in new areas, such as suitable arroyo chub habitat. Potential risks to this species as a result of adding a new 230 kV circuit to the existing transmission line would be a factor regardless of which alternative is ultimately chosen for construction, as this is a required component of BR RTP.

Operation and Maintenance

Operation and maintenance of the proposed transmission lines would pose minimal threat to the arroyo chub. Ground and air monitoring of the lines would not impact potential habitat along San Francisquito Creek. Temporary increased dust may occur and result in negligible impacts. Occasional road grading in the ROW on access roads and spur roads as required for safe vehicular access would not affect this species. During emergency operations, temporary disturbance may occur but would be minimized through emergency operation procedures, such as briefing crews on sensitive animal procedures, and minimized operations in sensitive habitats, as conditions permit. Potential risks to this species as a result of operations and maintenance of the BR RTP would be a factor regardless of which alternative is ultimately chosen for construction, as this is a required component of BR RTP.

Effects Determination

Alternative 1: The new 230 kV transmission line and operation and maintenance would have **no effect** on the arroyo chub. Reconductoring of the existing transmission line and addition of the new 230 kV circuit **may affect individuals of, but is not likely to result in a trend toward federal listing or loss of viability for, the arroyo chub.**

Alternative 2: Operation and maintenance would have **no effect** on the arroyo chub. The new 230 kV transmission line, reconductoring of the existing transmission line, and addition of the new 230 kV circuit **may affect individuals of, but is not likely to result in a trend toward federal listing or loss of viability for, the arroyo chub.**

Alternative 2a: Operation and maintenance would have **no effect** on the arroyo chub. The new 230 kV transmission line, reconductoring of the existing transmission line, and addition of the new 230 kV circuit **may affect individuals of, but is not likely to result in a trend toward federal listing or loss of viability for, the arroyo chub.**

Alternative 3: The new 230 kV transmission line and operation and maintenance would have **no effect** on the arroyo chub. Reconductoring of the existing transmission line and addition of the new 230 kV circuit **may affect individuals of, but is not likely to result in a trend toward federal listing or loss of viability for, the arroyo chub.**

California Legless Lizard

New 230 kV Transmission Line

Alternative 1 – There are no reported sightings of this species near Segment D, which contains isolated patches of marginal habitat. Construction of towers and grading of new or existing access roads along Alternative 1 is unlikely to result in extensive habitat loss given the marginal quality of much of the habitat present along this alternative for this species. However, in areas where construction is present in habitat that could support this species or if vehicles pass through areas of suitable habitat, they may crush individuals or compact the soil, resulting in long-term reduced habitat quality for this fossorial species. This would also be a concern because legless lizards are primarily active during the morning and evening (Fellers 2009) and would generally be inactive and basking throughout the day, leaving individuals more open to injury or mortality through construction. Furthermore, any excavations that are conducted and left

open during the day or overnight would pose a risk to any California legless lizards in the area which may get trapped in them. However, construction activities for Alternative 1 are not within potential habitat for the California legless lizard, which is unlikely to occur.

General practices that would reduce short- or long-term effects to California legless lizard include GP-3, GP-5, GP-11, GP-12, GP-17, GP-19, GP-24, GP-34, GP-35, GP-38, GP-41, GP-42, GP-43, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short- or long-term effects to California legless lizard include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of Existing Water Crossings), HYD-2 (New Road Construction Over Waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds into previously uninfested areas in the designated construction right-of-way), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-22 (Protect special-status reptile species).

Mitigation Measures for Impacts to California Legless Lizard

AIR-2a Implement construction fugitive dust control plan. This mitigation measure would require LADWP to prepare and implement a Fugitive Dust Emission Control Plan. (Refer to the Mitigation Planning Section of the EIS/EIR [USFS/BLM/LADWP 2011b] for the full text of this mitigation measure)

HYD-1 Use of Existing Water Crossings. This mitigation measure would require the Project to use existing access routes as available; to construct new roads by mowing or crushing vegetation to no less than four inches above grade; to keep new roads to a 12-foot maximum width; to use existing crossings at perennial streams, wetlands, and irrigation channels as feasible; and to restore new access roads that would not be used for ongoing maintenance. (Refer to the Mitigation Planning Section of the EIS/EIR [USFS/BLM/LADWP 2011b] for the full text of this mitigation measure)

HYD-2 New Road Construction Over Waterways. This mitigation measure would require roads to be built as near as possible to right angles to streams and washes if feasible; to install culverts where necessary; to minimize disturbance to vegetation and streambeds; to utilize dust control measures during construction; and to leave existing roads in a condition equal to or better than their preconstruction conditions. (Refer to the Mitigation Planning Section of the EIS/EIR [USFS/BLM/LADWP 2011b] for the full text of this mitigation measure)

BIO-1 Provide restoration/compensation for impacted sensitive vegetation communities. This mitigation measure would require LADWP to restore disturbed sites to pre-construction conditions or the desired future conditions per the ANF Land Management Plan. (Refer to Table 2 for the full text of this mitigation measure)

BIO-2 Prevent the spread of invasive weeds into previously uninfested areas in the designated construction right-of-way. This mitigation measure would require LADWP to prepare and implement a weed control plan; remove weed seed sources from construction access routes; remove weed seed sources from assembly yards, tower pads, pull sites, landing zones, and spur roads; and use herbicides where necessary to control exotic weeds. (Refer to Table 2 for the full text of this mitigation measure)

BIO-3 Incorporate riparian area avoidance and mitigation measures. This mitigation measure would require LADWP seek Forest Service approval prior to any construction or habitat modification within RCAs; prepare an RCA Treatment Plan in consultation with the Forest Service; avoid impacts to RCAs to the extent feasible; restore all affected RCAs to their pre-construction conditions; and restore or preserve off-site habitat where permanent RCA impacts are unavoidable. (Refer to Table 2 for the full text of this mitigation measure)

BIO-4 Provide restoration/compensation for affected jurisdictional areas. This mitigation measure would require LADWP to avoid impacts to areas under USACE, RWQCB, Forest Service, or

CDFG jurisdiction to the extent feasible and to provide restoration/compensation where applicable. (Refer to Table 2 for the full text of this mitigation measure)

BIO-5 Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife. This mitigation measure would require LADWP to conduct preconstruction surveys for special-status species, provide a biological monitor where special-status sign or suitable habitat is identified, and to cover all open trenches or excavations to prevent entrapment of wildlife. (Refer to Table 2 for the full text of this mitigation measure)

BIO-6 Implement a Worker Environmental Awareness Program. This mitigation measure would require a qualified biologist to conduct Worker Environmental Awareness Program (WEAP) training for all crew members. (Refer to Table 2 for the full text of this mitigation measure)

BIO-22 Protect special-status reptile species. This mitigation measure would require LADWP to retain a qualified biological monitor to oversee reptile protection measures during Project construction. (Refer to Table 2 for the full text of this mitigation measure)

Alternative 2 – There are no reported sightings of this species within Segment G, which contains limited suitable habitat in various locations near or within streambeds. California legless lizard is expected to be unlikely to occur along Segment G. Construction of towers and grading of new or existing access roads along Alternative 2 is unlikely to result in extensive habitat loss given the marginal quality of much of the habitat present along this alternative for this species. However, in areas where construction is present in habitat that could support this species or if vehicles pass through areas of suitable habitat, they may crush individuals or compact the soil, resulting in long-term reduced habitat quality for this fossorial species. This would also be a concern because legless lizards are primarily active during the morning and evening (Fellers 2009) and would generally be inactive and basking throughout the day, leaving individuals more open to injury or mortality through construction. Construction activity near wet or moist riparian areas, such as Drinkwater Flat, San Francisquito Creek, or other intermittent or ephemeral areas, may injure or kill individuals if present. Furthermore, any excavations that are conducted and left open during the day or overnight would pose a risk to any California legless lizards in the area which may get trapped in them. However, construction activities for Alternative 2 are not within potential habitat for the California legless lizard, which is unlikely to occur.

General practices that would reduce short- or long-term effects to California legless lizard include GP-3, GP-5, GP-11, GP-12, GP-17, GP-19, GP-24, GP-34, GP-35, GP-38, GP-41, GP-42, GP-43, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short- or long-term effects to California legless lizard include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of Existing Water Crossings), HYD-2 (New Road Construction Over Waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds into previously uninfested areas in the designated construction right-of-way), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-22 (Protect special-status reptile species).

Alternative 2a – There are no reported sightings of this species along Segments G or 2a, which contains limited suitable habitat in various locations near or within streambeds. California legless lizard is expected to be unlikely to occur along these areas. Construction of towers and grading of new or existing access roads along Alternative 2a is unlikely to result in extensive habitat loss given the marginal quality of much of the habitat present along this alternative for this species. However, in areas where construction is present in habitat that could support this species or if vehicles pass through areas of suitable habitat, they may crush individuals or compact the soil, resulting in long-term reduced habitat quality for this fossorial species. This would also be a concern because legless lizards are primarily active during the morning and evening (Fellers 2009) and would generally be inactive and basking throughout the day, leaving individuals more open to injury or mortality through construction. Construction activity near wet

or moist riparian areas, such as Drinkwater Flat, San Francisquito Creek, or other intermittent or ephemeral areas, may injure or kill individuals if present. No impacts would be expected along the streambed of South Portal Canyon, which is far below the actual construction area located along Tule Ridge Road. Furthermore, any excavations that are conducted and left open during the day or overnight would pose a risk to any California legless lizards in the area which may get trapped in them. However, construction activities for Alternative 2a are not within potential habitat for the California legless lizard, which is unlikely to occur.

General practices that would reduce short- or long-term effects to California legless lizard include GP-3, GP-5, GP-11, GP-12, GP-17, GP-19, GP-24, GP-34, GP-35, GP-38, GP-41, GP-42, GP-43, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short- or long-term effects to California legless lizard include include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of Existing Water Crossings), HYD-2 (New Road Construction Over Waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds into previously uninfested areas in the designated construction right-of-way), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-22 (Protect special-status reptile species).

Alternative 3 – There may be direct or indirect construction impacts to California legless lizard, expected to have a possibility of occurring based on two recent reported occurrences within four miles of Segment I and one 15-year old occurrence 0.20 mile from the segment. One recent occurrence resulted in two dead and two injured individuals, while the second recent occurrence resulted in the translocation of 18 adults and eight juveniles due to impending development at the site. The older sighting was of a dead individual. There may still be locations along this segment that could support this species, although there are no other reported occurrences. This species is known to reside in moist areas, and apparently requires high moisture content in the soil it inhabits. Direct injury or mortality of individuals of this species is possible because it hides under leaf litter and other cover, where it would not be seen. In areas where construction is present in habitat that could support this species or if vehicles pass through areas of suitable habitat, they may crush individuals or compact the soil, resulting in long-term reduced habitat quality for this fossorial species. This would also be a concern because legless lizards are primarily active during the morning and evening (Fellers 2009) and would generally be inactive and basking throughout the day, leaving individuals more open to injury or mortality through construction. Encroachment near riparian areas would be most likely to damage or kill individuals of this species, although open chaparral and even desert scrub may be used by this species (Stebbins 2003). Exposure on the surface during the day may subject it to predation. Habitat loss or degradation could potentially occur where construction or construction access is near riparian areas, chaparral in loose soils, or leaf litter around oak woodlands (Fellers 2009). Because this species tends to occur in moist areas or riparian areas when possible, protecting riparian habitats would benefit it. Furthermore, any excavations that are conducted and left open during the day or overnight would pose a risk to any California legless lizards in the area, which may get trapped in them.

General practices that would reduce short- or long-term effects to California legless lizard include GP-3, GP-5, GP-11, GP-12, GP-17, GP-19, GP-24, GP-34, GP-35, GP-38, GP-41, GP-42, GP-43, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short- or long-term effects to California legless lizard include include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of Existing Water Crossings), HYD-2 (New Road Construction Over Waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds into previously uninfested areas in the designated construction right-of-way), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle

operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-22 (Protect special-status reptile species).

Reconductoring

Reconductoring would occur along Segments A, B, G, and K. Segment G is analyzed in detail for the California legless lizard under the Alternatives 2 and 2a sections. Potential risks to this species as a result of reconductoring the existing transmission line would be a factor regardless of which alternative is ultimately chosen for construction, as this is a required component of BR RTP.

New 230 kV Circuit

Under Segment J, there may be direct or indirect construction impacts to California legless lizard, expected to have a possibility of occurring based on availability of suitable habitat within riparian areas along this component, such as in Dry Canyon and Charlie Canyon. This species is known to reside in moist areas, and apparently requires high moisture content in the soil it inhabits. While both of these streambeds are intermittent, the presence of riparian vegetation in each (such as mulefat) would indicate that the soil may be moist enough to support this species, although the frequency with which water flows through these areas is unknown. Direct injury or mortality of individuals of this species is possible because it hides under leaf litter and other cover, where it would not be seen. In areas where construction is present in habitat that could support this species or if vehicles pass through areas of suitable habitat, they may crush individuals or compact the soil, resulting in long-term reduced habitat quality for this fossorial species. This would also be a concern because legless lizards are primarily active during the morning and evening (Fellers 2009) and would generally be inactive and basking throughout the day, leaving individuals more open to injury or mortality through construction. Encroachment near riparian areas would be most likely to damage or kill individuals of this species, although open chaparral and even desert scrub may be used by it (Stebbins 2003). Exposure on the surface during the day may subject it to predation. Furthermore, any excavations that are conducted and left open during the day or overnight would pose a risk to any California legless lizards in the area which may get trapped in them. Mitigation measures, such as those described above in the Alternatives 1, 2, 2a, and 3 descriptions, would be expected to reduce impacts to this species and minimize the amount of habitat and individuals that could be lost during construction of the BR RTP. Potential risks to this species as a result of adding a new 230 kV circuit to the existing transmission line would be a factor regardless of which alternative is ultimately chosen for construction, as this is a required component of BR RTP.

Operation and Maintenance

Operation and maintenance of the proposed transmission lines would pose minimal threat to the California legless lizard. Ground and air monitoring of the lines would not impact suitable habitat for this species. Temporary increased dust may occur and result in negligible impacts. Occasional road grading in the ROW on access roads and spur roads as required for safe vehicular access may affect this species if it is hiding or foraging nearby or crossing the road. During emergency operations, temporary disturbance may occur but would be minimized through emergency operation procedures, such as briefing crews on sensitive animal procedures, and minimized operations in sensitive habitats, as conditions permit. Operation and maintenance of the BR RTP would have no effect on the California legless lizard. Potential risks to this species as a result of operations and maintenance of the BR RTP would be a factor regardless of which alternative is ultimately chosen for construction, as this is a required component of BR RTP.

Effects Determination

Alternative 1: The new 230 kV transmission line, reconductoring, and operation and maintenance of the BR RTP would have **no effect** on the California legless lizard. Addition of the new 230 kV circuit **may affect individuals of, but is not likely to result in a trend toward federal listing or loss of viability for**, the California legless lizard.

Alternatives 2: The new 230 kV transmission line, reconductoring, and operation and maintenance of the BR RTP would have **no effect** on the California legless lizard. Addition of the new 230 kV circuit **may affect individuals of, but is not likely to result in a trend toward federal listing or loss of viability for**, the California legless lizard.

Alternative 2a: The new 230 kV transmission line, reconductoring, and operation and maintenance of the BR RTP would have **no effect** on the California legless lizard. Addition of the new 230 kV circuit **may affect individuals of, but is not likely to result in a trend toward federal listing or loss of viability for**, the California legless lizard.

Alternative 3: The new 230 kV transmission line and addition of the new 230 kV circuit **may affect individuals of, but is not likely to result in a trend toward federal listing or loss of viability for**, the California legless lizard. Reconductoring and operation and maintenance of the BR RTP would have **no effect** on the California legless lizard.

Southwestern Pond Turtle

New 230 kV Transmission Line

Alternative 1 – In fall 2009, a population of at least 17 southwestern pond turtles were discovered in Castaic Creek adjacent to Castaic Power Plant and were relocated upstream in Fish Canyon and Cienega Canyon. While the turtles may move back downstream, it is unlikely that they will move up and over the opposite ridge toward Alternative 1. There may be other areas throughout Segment D which contain suitable habitat along the streambed, although all stream sections observed in 2008 and 2009, such as Liebre Gulch, have been shallow intermittent stretches. This species is unlikely to occur within the work areas during Project construction. Because there are no known areas of perennial water or deep pools around work areas along this alternative, loss or degradation of riparian habitat that could support this species throughout the year would not occur. Instead, upland habitat may be lost in which individual turtles may overwinter or lay eggs. Upland habitat for this species is generally characterized as areas with abundant canopy cover from vegetation such as willow, blackberry, coyote bush, pine, poison oak, and stinging nettle with heavy leaf litter on the ground for overwintering, and sparse grass or forb vegetation and hard clay or silt soils for nesting (Bettelheim 2005). In areas such as these it is possible that turtles may be injured or killed by construction vehicles or equipment should construction be required for towers or access. Upland habitat which would be suitable for this species when it disperses overland could be lost or degraded by construction activities such as tower construction, road grading, spread of non-native weeds, or soil compaction. However, because there is no known riparian habitat in the vicinity of the proposed ROW that could support turtles for the rest of the year outside of overwintering and oviposition, it is also unlikely that individuals would be found in upland habitat and directly affected by BR RTP construction.

General practices that would reduce short- and long-term effects to southwestern pond turtle include GP-3, GP-5, GP-11, GP-12, GP-17, GP-19, GP-24, GP-34, GP-35, GP-38, GP-41, GP-42, GP-43, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short- or long-term effects to southwestern pond turtle include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of Existing Water Crossings), HYD-2 (New Road Construction Over Waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds into previously uninfested areas in the designated construction right-of-way), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-22 (Protect special-status reptile species).

Mitigation Measures for Impacts to Southwestern Pond Turtle

- AIR-2a Implement construction fugitive dust control plan.** This mitigation measure would require LADWP to prepare and implement a Fugitive Dust Emission Control Plan. (Refer to the Mitigation Planning Section of the EIS/EIR [USFS/BLM/LADWP 2011b] for the full text of this mitigation measure)
- HYD-1 Use of Existing Water Crossings.** This mitigation measure would require the Project to use existing access routes as available; to construct new roads by mowing or crushing vegetation to no less than four inches above grade; to keep new roads to a 12-foot maximum width; to use existing crossings at perennial streams, wetlands, and irrigation channels as feasible; and to restore new access roads that would not be used for ongoing maintenance. (Refer to the Mitigation Planning Section of the EIS/EIR [USFS/BLM/LADWP 2011b] for the full text of this mitigation measure)
- HYD-2 New Road Construction Over Waterways.** This mitigation measure would require roads to be built as near as possible to right angles to streams and washes if feasible; to install culverts where necessary; to minimize disturbance to vegetation and streambeds; to utilize dust control measures during construction; and to leave existing roads in a condition equal to or better than their preconstruction conditions. (Refer to the Mitigation Planning Section of the EIS/EIR [USFS/BLM/LADWP 2011b] for the full text of this mitigation measure)
- BIO-1 Provide restoration/compensation for impacted sensitive vegetation communities.** This mitigation measure would require LADWP to restore disturbed sites to pre-construction conditions or the desired future conditions per the ANF Land Management Plan. (Refer to Table 2 for the full text of this mitigation measure)
- BIO-2 Prevent the spread of invasive weeds into previously uninfested areas in the designated construction right-of-way.** This mitigation measure would require LADWP to prepare and implement a weed control plan; remove weed seed sources from construction access routes; remove weed seed sources from assembly yards, tower pads, pull sites, landing zones, and spur roads; and use herbicides where necessary to control exotic weeds. (Refer to Table 2 for the full text of this mitigation measure)
- BIO-3 Incorporate riparian area avoidance and mitigation measures.** This mitigation measure would require LADWP seek Forest Service approval prior to any construction or habitat modification within RCAS; prepare an RCA Treatment Plan in consultation with the Forest Service; avoid impacts to RCAs to the extent feasible; restore all affected RCAs to their pre-construction conditions; and restore or preserve off-site habitat where permanent RCA impacts are unavoidable. (Refer to Table 2 for the full text of this mitigation measure)
- BIO-4 Provide restoration/compensation for affected jurisdictional areas.** This mitigation measure would require LADWP to avoid impacts to areas under USACE, RWQCB, Forest Service, or CDFG jurisdiction to the extent feasible and to provide restoration/compensation where applicable. (Refer to Table 2 for the full text of this mitigation measure)
- BIO-5 Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife.** This mitigation measure would require LADWP to conduct preconstruction surveys for special-status species, provide a biological monitor where special-status sign or suitable habitat is identified, and to cover all open trenches or excavations to prevent entrapment of wildlife. (Refer to Table 2 for the full text of this mitigation measure)
- BIO-6 Implement a Worker Environmental Awareness Program.** This mitigation measure would require a qualified biologist to conduct Worker Environmental Awareness Program (WEAP) training for all crew members. (Refer to Table 2 for the full text of this mitigation measure)
- BIO-22 Protect special-status reptile species.** This mitigation measure would require LADWP to retain a qualified biological monitor to oversee reptile protection measures during Project construction. (Refer to Table 2 for the full text of this mitigation measure)

Alternative 2 – Areas where this turtle has been identified by biologists, which are the Drinkwater and St. Francis Dam reaches of San Francisquito Creek, are not expected to be affected by construction activity,

as construction will be over a ridge in Dry Canyon and will not use San Francisquito Canyon as access through this portion of Segment G. Habitat loss should be minimal, judging from the location of sections of habitat relative to the location of the proposed ROW. Habitat is present in a perennial oak riparian woodland area of Dry Canyon beginning roughly at the intersection of Forest Roads 5N27 and 6N21; this area is not known to be inhabited by turtles and no turtles or signs of turtles were observed during any 2008 and 2009 amphibian surveys. This area, additionally, can likely be avoided except by foot traffic during the final line-stringing phase of construction. It is possible that turtles may venture into the construction area during their seasonal migrations into or out of wintering habitat. While most southwestern pond turtles typically do not move more than 500 meters upland, they have also been known to move up to 5 km if sufficiently stressed for appropriate habitat conditions (Bettelheim 2005). Alternative 2 is approximately one mile southeast of the previously documented occupied habitat, but it is probably unlikely that turtles would be able to traverse this distance due to the steep ridge in between San Francisquito Canyon and Dry Canyon, where the proposed ROW is. Should any turtles be present, however, injury or mortality could occur if they were on land or buried for the winter, depending on construction timing. Any turtles that happen to be pushed into the open by construction would also be open to predation.

General practices that would reduce short- and long-term effects to southwestern pond turtle include GP-3, GP-5, GP-11, GP-12, GP-17, GP-19, GP-24, GP-34, GP-35, GP-38, GP-41, GP-42, GP-43, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short- or long-term effects to southwestern pond turtle include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of Existing Water Crossings), HYD-2 (New Road Construction Over Waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds into previously uninfested areas in the designated construction right-of-way), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-22 (Protect special-status reptile species).

Alternative 2a – Areas where this turtle has been identified by biologists, which are the Drinkwater and St. Francis Dam reaches of San Francisquito Creek, are not expected to be affected by construction activity, as construction will be over a ridge in Dry Canyon and will not use San Francisquito Canyon as access through this portion of Segment G. There is no suitable habitat to support this species within South Portal Canyon along Segment 2a. Habitat loss should be minimal, judging from the location of sections of habitat relative to the location of the proposed ROW. Habitat is present in a perennial oak riparian woodland area of Dry Canyon beginning roughly at the intersection of Forest Roads 5N27 and 6N21; this area is not known to be inhabited by turtles and no turtles or signs of turtles were observed during any 2008 and 2009 amphibian surveys. This area, additionally, can likely be avoided except by foot traffic during the final line-stringing phase of construction. It is possible that turtles may venture into the construction area during their seasonal migrations into or out of wintering habitat. While most southwestern pond turtles typically do not move more than 500 meters upland, they have also been known to move up to 5 km if sufficiently stressed for appropriate habitat conditions (Bettelheim 2005). Segment G is approximately one mile southeast of the previously documented occupied habitat, but it is probably unlikely that turtles would be able to traverse this distance due to the steep ridge in between San Francisquito Canyon and Dry Canyon, where the proposed ROW is. Should any turtles be present, however, injury or mortality could occur if they were on land or buried for the winter, depending on construction timing. Any turtles that happen to be pushed into the open by construction would also be open to predation.

General practices that would reduce short- and long-term effects to southwestern pond turtle include GP-3, GP-5, GP-11, GP-12, GP-17, GP-19, GP-24, GP-34, GP-35, GP-38, GP-41, GP-42, GP-43, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short- or long-

term effects to southwestern pond turtle include include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of Existing Water Crossings), HYD-2 (New Road Construction Over Waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds into previously uninfested areas in the designated construction right-of-way), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-22 (Protect special-status reptile species).

Reconductoring

Reconductoring would occur along Segments A, B, G, and K. Segment G is analyzed in detail for southwestern pond turtle impacts in the preceding section under new 230 kV transmission line Alternatives 2 and 2a. Potential risks to this species as a result of reconductoring the existing transmission line would be a factor regardless of which alternative is ultimately chosen for construction, as this is a required component of BR RTP.

New 230 kV Circuit

A population of at least 17 southwestern pond turtles was discovered in Castaic Creek in fall 2009 and relocated to Fish Canyon and Cienaga Canyon due to a construction project in the area. Should the turtles move back downstream and reestablish in the same general area as before, they will be approximately 1,000 feet from the northern terminus of the new 230 kV circuit. However, it is unlikely that they would be present or affected by construction, which would be separated from Castaic Creek by the Castaic Power Plant (including material and equipment staging areas, an employee parking lot, and the power plant itself), and no effects would be expected. Potential risks to this species as a result adding a new 230 kV circuit to the existing transmission line would be a factor regardless of which alternative is ultimately chosen for construction, as this is a required component of BR RTP.

Operation and Maintenance

Operation and maintenance of the proposed transmission lines pose minimal threat to southwestern pond turtle. Ground monitoring of the lines would be limited in potential habitat along the transmission line corridors during the nesting and breeding season; air monitoring would not be expected to have any impact. Temporary increased human presence, noise, and dust may occur and result in negligible impacts. Occasional road grading in the ROW on access roads and spur roads as required for safe vehicular access would not affect this species unless it were crossing the road or wintering within it, which is unlikely. During emergency operations temporary disturbance may occur but would be minimized through emergency operation procedures, such as briefing crews on sensitive animal procedures, and minimized operations in sensitive habitats as conditions permit. Operation and maintenance of the BR RTP would have no effect on southwestern pond turtles. Potential risks to this species as a result of operation and maintenance of the Project would be a factor regardless of which alternative is ultimately chosen for construction, as this is a required component of BR RTP.

Effects Determination

Alternative 1: The new 230 kV transmission line, the new 230 kV circuit, and operation and maintenance of the BR RTP would have **no effect** on the southwestern pond turtle. Reconductoring of the existing line **may affect individuals of, but is not likely to result in a trend toward federal listing or loss of viability for**, the southwestern pond turtle.

Alternative 2: The new 230 kV transmission line and reconductoring **may affect individuals of, but is not likely to result in a trend toward federal listing or loss of viability for**, the southwestern pond

turtle. The addition of the new 230 kV circuit and operation and maintenance of the BR RTP would have **no effect** on the southwestern pond turtle.

Alternative 2a: The new 230 kV transmission line and reconductoring **may affect individuals of, but is not likely to result in a trend toward federal listing or loss of viability for**, the southwestern pond turtle. The addition of the new 230 kV circuit and operation and maintenance of the BR RTP would have **no effect** on the southwestern pond turtle.

Alternative 3: The new 230 kV transmission line, the new 230 kV circuit, and operation and maintenance of the BR RTP would have **no effect** on the southwestern pond turtle. Reconductoring of the existing line **may affect individuals of, but is not likely to result in a trend toward federal listing or loss of viability for**, the southwestern pond turtle.

Snake Species (San Bernardino Ringneck Snake, Coastal Rosy Boa, and Two-striped Garter Snake)

New 230 kV Transmission Line

Alternative 1 – Under Segment D, there may be direct or indirect effects to coastal rosy boa or two-striped garter snake. San Bernardino ringneck snake is not expected to occur on this segment. Coastal rosy boa is expected to be likely to occur based on availability of suitable terrestrial and aquatic habitat consisting of abundant chaparral along Segment D, particularly north of Templin Highway, combined with various areas of canyon and wash habitat, such as in Liebre Gulch or in and around Charlie Canyon. Two-striped garter snake is expected to be unlikely to occur because although several individuals were identified by POWER approximately three miles upstream of Castaic Power Plant, the streambeds which run under Segment D are not perennial and were observed during BR RTP surveys to be dry for much of the year. Construction of new towers and access roads will result in vegetation and habitat loss, and any movement of rocky areas for construction purposes may destroy additional habitat and refuges. Moving rocks may also result in injury or mortality if any snakes are present in between the rocks or on the ground adjacent to them. Excessive disturbance to washes or streambeds may have additional impacts to habitat, as these snake species are attracted to water sources, particularly two-striped garter snake (Stebbins 2003). Disrupting rodents or herpetofauna could also cause reductions in food supply for any snakes that may be in or near the ROW, while displacing snakes into the open may cause increases in predation. Furthermore, any excavations that are conducted and left open during the day or overnight would pose a risk to any snakes in the area which may get trapped in them. Finally, individuals may be unintentionally run over by construction traffic should they be basking on the ground and undetected. Due to the limited road access, helicopter construction would be used to limit the anticipated impacts to the snake species from ground disturbance. Figure 7, the Helicopter Mitigation Map, illustrates potential locations for helicopter construction.

General practices and mitigation measures protecting riparian habitat and water quality would help to protect areas where these species, particularly the two-striped garter snake, may be found. General practices that would reduce short- or long-term effects to coastal rosy boa and two-striped garter snake include GP-3, GP-5, GP-11, GP-12, GP-17, GP-19, GP-24, GP-34, GP-35, GP-38, GP-41, GP-42, GP-43, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short- or long-term effects to coastal rosy boa and two-striped garter snake include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of Existing Water Crossings), HYD-2 (New Road Construction Over Waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds into previously uninfested areas in the designated construction right-of-way), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-22 (Protect special-status reptile species).

Mitigation Measures for Impacts to Snake Species

- AIR-2a Implement construction fugitive dust control plan.** This mitigation measure would require LADWP to prepare and implement a Fugitive Dust Emission Control Plan. (Refer to the Mitigation Planning Section of the EIS/EIR [USFS/BLM/LADWP 2011b] for the full text of this mitigation measure)
- HYD-1 Use of Existing Water Crossings.** This mitigation measure would require the Project to use existing access routes as available; to construct new roads by mowing or crushing vegetation to no less than four inches above grade; to keep new roads to a 12-foot maximum width; to use existing crossings at perennial streams, wetlands, and irrigation channels as feasible; and to restore new access roads that would not be used for ongoing maintenance. (Refer to the Mitigation Planning Section of the EIS/EIR [USFS/BLM/LADWP 2011b] for the full text of this mitigation measure)
- HYD-2 New Road Construction Over Waterways.** This mitigation measure would require roads to be built as near as possible to right angles to streams and washes if feasible; to install culverts where necessary; to minimize disturbance to vegetation and streambeds; to utilize dust control measures during construction; and to leave existing roads in a condition equal to or better than their preconstruction conditions. (Refer to the Mitigation Planning Section of the EIS/EIR [USFS/BLM/LADWP 2011b] for the full text of this mitigation measure)
- BIO-1 Provide restoration/compensation for impacted sensitive vegetation communities.** This mitigation measure would require LADWP to restore disturbed sites to pre-construction conditions or the desired future conditions per the ANF Land Management Plan. (Refer to Table 2 for the full text of this mitigation measure)
- BIO-2 Prevent the spread of invasive weeds into previously uninfested areas in the designated construction right-of-way.** This mitigation measure would require LADWP to prepare and implement a weed control plan; remove weed seed sources from construction access routes; remove weed seed sources from assembly yards, tower pads, pull sites, landing zones, and spur roads; and use herbicides where necessary to control exotic weeds. (Refer to Table 2 for the full text of this mitigation measure)
- BIO-3 Incorporate riparian area avoidance and mitigation measures.** This mitigation measure would require LADWP seek Forest Service approval prior to any construction or habitat modification within RCAs; prepare an RCA Treatment Plan in consultation with the Forest Service; avoid impacts to RCAs to the extent feasible; restore all affected RCAs to their pre-construction conditions; and restore or preserve off-site habitat where permanent RCA impacts are unavoidable. (Refer to Table 2 for the full text of this mitigation measure)
- BIO-4 Provide restoration/compensation for affected jurisdictional areas.** This mitigation measure would require LADWP to avoid impacts to areas under USACE, RWQCB, Forest Service, or CDFG jurisdiction to the extent feasible and to provide restoration/compensation where applicable. (Refer to Table 2 for the full text of this mitigation measure)
- BIO-5 Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife.** This mitigation measure would require LADWP to conduct preconstruction surveys for special-status species, provide a biological monitor where special-status sign or suitable habitat is identified, and to cover all open trenches or excavations to prevent entrapment of wildlife. (Refer to Table 2 for the full text of this mitigation measure)
- BIO-6 Implement a Worker Environmental Awareness Program.** This mitigation measure would require a qualified biologist to conduct Worker Environmental Awareness Program (WEAP) training for all crew members. (Refer to Table 2 for the full text of this mitigation measure)
- BIO-22 Protect special-status reptile species.** This mitigation measure would require LADWP to retain a qualified biological monitor to oversee reptile protection measures during Project construction. (Refer to Table 2 for the full text of this mitigation measure)

Alternative 2 – Under Segment G, there may be direct or indirect effects to San Bernardino ringneck snake, coastal rosy boa, or two-striped garter snake. San Bernardino ringneck snake is expected to have a possibility to occur based on availability of suitable rocky habitat particularly along the western side of San Francisquito Canyon and aquatic habitat in San Francisquito Creek. Coastal rosy boa is expected to be present due to a sighting of an individual by a POWER biologist in 2009, while two-striped garter snake is expected to be likely to occur based on several perennial water stretches in San Francisquito Canyon and Dry Canyon. Construction of new towers and access roads will result in vegetation and habitat loss, and any movement of rocky areas for construction purposes may destroy additional habitat and refuges. Moving rocks may also result in injury or mortality if any snakes are present in between the rocks or on the ground adjacent to them. Excessive disturbance to washes or streambeds may have additional impacts to habitat, as these snake species are attracted to water sources, particularly two-striped garter snake (Stebbins 2003). Disrupting rodents or herpetofauna could also cause reductions in food supply for any snakes that may be in or near the ROW, while displacing snakes into the open may cause increases in predation. Furthermore, any excavations that are conducted and left open during the day or overnight would pose a risk to any snakes in the area, which may get trapped in them. Finally, individuals may be unintentionally run over by construction traffic should they be basking on the ground and undetected.

General practices and mitigation measures protecting riparian habitat and water quality would help to protect areas where these species, particularly the two-striped garter snake, may be found. General practices that would reduce short- or long-term effects to San Bernardino ringneck snake, coastal rosy boa, and two-striped garter snake include GP-3, GP-5, GP-11, GP-12, GP-17, GP-19, GP-24, GP-34, GP-35, GP-38, GP-41, GP-42, GP-43, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short- or long-term effects to San Bernardino ringneck snake, coastal rosy boa, and two-striped garter snake include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of Existing Water Crossings), HYD-2 (New Road Construction Over Waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds into previously uninfested areas in the designated construction right-of-way), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-22 (Protect special-status reptile species).

Alternative 2a – Under Segment G and Segment 2a there may be direct or indirect effects to San Bernardino ringneck snake, coastal rosy boa, or two-striped garter snake. On Segment G, San Bernardino ringneck snake is expected to have a possibility to occur based on availability of suitable rocky habitat particularly along the western side of San Francisquito Canyon and aquatic habitat in San Francisquito Creek. Coastal rosy boa is expected to be present due to a sighting of an individual by a POWER biologist in 2009, while two-striped garter snake is expected to be likely to occur based on several perennial water stretches in San Francisquito Canyon and Dry Canyon. On Segment 2a, coastal rosy boa is expected to be likely to occur due to a sighting by a POWER biologist during 2009 surveys and availability of chaparral habitat on this segment with a riparian area through the center, while two-striped garter snake is expected to be likely to occur based on availability of a perennial riparian stretch and surrounding chaparral habitat; San Bernardino ringneck snake is not expected to occur. Construction of new towers and access roads will result in vegetation and habitat loss in terrestrial or riparian areas which may be utilized by any of these species. However, due to the limited road access, helicopter construction would be used to limit the anticipated impacts to the snake species from ground disturbance. Figure 7, the Helicopter Mitigation Map, illustrates potential locations for helicopter construction. In addition, movement of rocky areas for construction purposes may destroy additional habitat and refuges and may also result in injury or mortality if any snakes are present in between the rocks or on the ground adjacent to them. Disrupting rodents or herpetofauna could also cause reductions in food supply for any snakes that may be in or near the ROW, while displacing snakes into the open may cause increases in predation.

Furthermore, any excavations that are conducted and left open during the day or overnight would pose a risk to any snakes in the area, which may get trapped in them. Finally, individuals may be unintentionally run over by construction traffic should they be basking on the ground and undetected.

General practices and mitigation measures protecting riparian habitat and water quality would help to protect areas where these species, particularly the two-striped garter snake, may be found. General practices that would reduce short- or long-term effects to San Bernardino ringneck snake, coastal rosy boa, and two-striped garter snake include GP-3, GP-5, GP-11, GP-12, GP-17, GP-19, GP-24, GP-34, GP-35, GP-38, GP-41, GP-42, GP-43, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short- or long-term effects to San Bernardino ringneck snake, coastal rosy boa, and two-striped garter snake include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of Existing Water Crossings), HYD-2 (New Road Construction Over Waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds into previously uninfested areas in the designated construction right-of-way), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-22 (Protect special-status reptile species).

Alternative 3 – Under Segment I, there may be direct or indirect effects to coastal rosy boa or two-striped garter snake. Coastal rosy boa is expected to be likely to occur due to availability of rocky chaparral habitat on this segment with several riparian areas, while two-striped garter snake is expected to have a possibility of occurring based on several perennial sightings greater than 10 years old within one mile of this segment, the most recent being from 1999 (CDFG 2010). Construction of new towers and access roads will result in vegetation and habitat loss, and any movement of rocky areas for construction purposes may destroy additional habitat and refuges. Moving rocks may also result in injury or mortality if any snakes are present in between the rocks or on the ground adjacent to them. Excessive disturbance to washes or streambeds may have additional impacts to habitat, as these snake species are attracted to water sources, particularly two-striped garter snake (Stebbins 2003), although perennial water sources on Segment I are few, if any. Disrupting rodents or herpetofauna could also cause reductions in food supply for any snakes that may be in or near the ROW, while displacing snakes into the open may cause increases in predation. Furthermore, any excavations that are conducted and left open during the day or overnight would pose a risk to any snakes in the area, which may get trapped in them. Finally, individuals may be unintentionally run over by construction traffic should they be basking on the ground and undetected.

General practices and mitigation measures protecting riparian habitat and water quality would help to protect areas where these species, particularly the two-striped garter snake, may be found. General practices that would reduce short- or long-term effects to coastal rosy boa and two-striped garter snake include GP-3, GP-5, GP-11, GP-12, GP-17, GP-19, GP-24, GP-34, GP-35, GP-38, GP-41, GP-42, GP-43, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short- or long-term effects to coastal rosy boa and two-striped garter snake include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of Existing Water Crossings), HYD-2 (New Road Construction Over Waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds into previously uninfested areas in the designated construction right-of-way), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-22 (Protect special-status reptile species).

Reconductoring

The reconductoring would occur along Segments A, B, G, and K. Segment G is analyzed in detail for San Bernardino ringneck snake, coastal rosy boa, and two-striped garter snake impacts in the preceding section under new 230 kV transmission line Alternatives 2 and 2a. Potential risks to this species as a result of reconductoring the existing transmission line would be a factor regardless of which alternative is ultimately chosen for construction, as this is a required component of BRRTP.

New 230 kV Circuit

Under Segment J, there may be direct or indirect effects to coastal rosy boa or two-striped garter snake. Coastal rosy boa is expected to be likely to occur due to availability of suitable vegetative habitat, rocky outcrops, and intermittent streambeds, while two-striped garter snake is expected to have a possibility of occurring based on two individuals identified approximately three miles away by POWER biologists in 2009 combined with a lack of known perennial streambeds under the construction area. Moving rocks may result in injury or mortality if any snakes are present in between the rocks or on the ground adjacent to them. Excessive disturbance to washes or streambeds may have additional impacts to habitat, as these snake species are attracted to water sources, particularly two-striped garter snake (Stebbins 2003). Disrupting rodents or herpetofauna could also cause reductions in food supply for any snakes that may be in or near the ROW, while displacing snakes into the open may cause increases in predation. Finally, individuals may be unintentionally run over by construction traffic should they be basking on the ground and undetected. Potential risks to this species as a result of adding a new 230 kV circuit to the existing transmission line would be a factor regardless of which alternative is ultimately chosen for construction, as this is a required component of BRRTP.

Operation and Maintenance

Operation and maintenance of the proposed transmission lines would pose minimal threat to the San Bernardino ringneck snake, coastal rosy boa, and two-striped garter snake. Ground and air monitoring of the lines would not impact potential habitat. Temporary increased dust may occur and result in negligible impacts. Occasional road grading in the ROW on access roads and spur roads as required for safe vehicular access would not affect these species unless they were present in the road. During emergency operations, temporary disturbance may occur but would be minimized through emergency operation procedures, such as briefing crews on sensitive animal procedures, and minimized operations in sensitive habitats, as conditions permit. Operation and maintenance of the BRRTP would have no effect on the San Bernardino ringneck snake, coastal rosy boa, and two-striped garter snake. Potential risks to this species as a result of operation and maintenance of the BRRTP would be a factor regardless of which alternative is ultimately chosen for construction, as this is a required component of BRRTP.

Effects Determination

Alternative 1: The new 230 kV transmission line, reconductoring, the new 230 kV circuit **may affect individuals of, but is not likely to result in a trend toward federal listing or loss of viability for**, the San Bernardino ringneck snake, the coastal rosy boa, and the two-striped garter snake. Operation and maintenance would have **no effect** on the San Bernardino ringneck snake, the coastal rosy boa, and the two-striped garter snake.

Alternative 2: The new 230 kV transmission line, reconductoring, the new 230 kV circuit **may affect individuals of, but is not likely to result in a trend toward federal listing or loss of viability for**, the San Bernardino ringneck snake, the coastal rosy boa, and the two-striped garter snake. Operation and maintenance would have **no effect** on the San Bernardino ringneck snake, the coastal rosy boa, and the two-striped garter snake.

Alternative 2a: The new 230 kV transmission line, reconductoring, the new 230 kV circuit **may affect individuals of, but is not likely to result in a trend toward federal listing or loss of viability for**, the San Bernardino ringneck snake, the coastal rosy boa, and the two-striped garter snake. Operation and maintenance would have **no effect** on the San Bernardino ringneck snake, the coastal rosy boa, and the two-striped garter snake.

Alternative 3: The new 230 kV transmission line, reconductoring, the new 230 kV circuit **may affect individuals of, but is not likely to result in a trend toward federal listing or loss of viability for**, the San Bernardino ringneck snake, the coastal rosy boa, and the two-striped garter snake. Operation and maintenance would have **no effect** on the San Bernardino ringneck snake, the coastal rosy boa, and the two-striped garter snake.

Coast Horned Lizard

New 230 kV Transmission Line

Alternative 1 – This species, while not considered in the direct construction corridor impacts, nevertheless is expected to be present in the general area. Under Segment D, there would be direct or indirect effects to coast horned lizard which is expected to be present due to numerous sightings within 1.5 miles of the segment, including two of which are within 0.25 mile of the segment's centerline (CDFG 2010). Additionally, a POWER biologist observed a coast horned lizard within 0.10 mile of the proposed ROW on the road along the West Fork of Liebre Gulch in 2010. Tower construction and grading of new or existing access roads would result in habitat and vegetation loss, and may result in direct injury or mortality of individuals. Removal of chaparral for the grading of access roads or tower sites would reduce or degrade suitable habitat for this species. Additionally, any coast horned lizards that go undetected by preconstruction surveys—dictated by mitigation measure BIO-22—and are present under vegetation, on roads, in streambed crossings, or in burrows, may be crushed by foot traffic, vehicles, or heavy equipment. Furthermore, any excavations that are conducted and left open during the day or overnight would pose a risk to any coast horned lizards, which may fall into them. It is expected that the risk of falling into an open hole would be greater overnight, as the construction noise and vibrations would be more likely to keep any coast horned lizards from approaching too close to the active site during the day. The construction work may also lead to dispersal of individuals from the area, which could lead to reduced fitness of those individuals if the adjacent habitat is less optimal. This dispersal could also lead to an increased risk of predation or competition if any animals are forced to relocate to unfamiliar territory.

General practices that would reduce short- or long-term effects to coast horned lizard include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short- or long-term effects to coast horned lizard include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of Existing Water Crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds into previously uninfested areas in the designated construction right-of-way), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-22 (Protect special-status reptile species).

Mitigation Measures for Impacts to Coast Horned Lizard

AIR-2a Implement construction fugitive dust control plan. This mitigation measure would require LADWP to prepare and implement a Fugitive Dust Emission Control Plan. (Refer to the Mitigation Planning Section of the EIS/EIR [USFS/BLM/LADWP 2011b] for the full text of this mitigation measure)

HYD-1 Use of Existing Water Crossings. This mitigation measure would require the Project to use existing access routes as available; to construct new roads by mowing or crushing vegetation to no less than four inches above grade; to keep new roads to a 12-foot maximum width; to use existing crossings at perennial streams, wetlands, and irrigation channels as feasible; and to

restore new access roads that would not be used for ongoing maintenance. (Refer to the Mitigation Planning Section of the EIS/EIR [USFS/BLM/LADWP 2011b] for the full text of this mitigation measure)

- BIO-1 Provide restoration/compensation for impacted sensitive vegetation communities.** This mitigation measure would require LADWP to restore disturbed sites to pre-construction conditions or the desired future conditions per the ANF Land Management Plan. (Refer to Table 2 for the full text of this mitigation measure)
- BIO-2 Prevent the spread of invasive weeds into previously uninfested areas in the designated construction right-of-way.** This mitigation measure would require LADWP to prepare and implement a weed control plan; remove weed seed sources from construction access routes; remove weed seed sources from assembly yards, tower pads, pull sites, landing zones, and spur roads; and use herbicides where necessary to control exotic weeds. (Refer to Table 2 for the full text of this mitigation measure)
- BIO-5 Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife.** This mitigation measure would require LADWP to conduct preconstruction surveys for special-status species, provide a biological monitor where special-status sign or suitable habitat is identified, and to cover all open trenches or excavations to prevent entrapment of wildlife. (Refer to Table 2 for the full text of this mitigation measure)
- BIO-6 Implement a Worker Environmental Awareness Program.** This mitigation measure would require a qualified biologist to conduct Worker Environmental Awareness Program (WEAP) training for all crew members. (Refer to Table 2 for the full text of this mitigation measure)
- BIO-22 Protect special-status reptile species.** This mitigation measure would require LADWP to retain a qualified biological monitor to oversee reptile protection measures during Project construction. (Refer to Table 2 for the full text of this mitigation measure)

Alternative 2 – Under Segment G, there would be direct or indirect effects to coast horned lizard, expected to be present due to numerous sightings within San Francisco Canyon by POWER biologists in 2009. Tower construction and grading of new or existing access roads would result in habitat and vegetation loss, and may result in direct injury or mortality of individuals. Removal of chaparral for the grading of access roads or tower sites would reduce or degrade suitable habitat for this species. Additionally, any coast horned lizards that go undetected by preconstruction surveys—dictated by mitigation measure BIO-22—and are present under vegetation, on roads, or in burrows, may be crushed by foot traffic, vehicles, or heavy equipment. Furthermore, any excavations that are conducted and left open during the day or overnight would pose a risk to any coast horned lizards, which may fall into them. It is expected that the risk of falling into an open hole would be greater overnight, as the construction noise and vibrations would be more likely to keep any coast horned lizards from approaching too close to the active site during the day. The construction work may also lead to dispersal of individuals from the area, potentially leading to an increased risk or predation or competition if any animals are forced to relocate to unfamiliar territory.

General practices that would reduce short- or long-term effects to coast horned lizard include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short- or long-term effects to coast horned lizard include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of Existing Water Crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds into previously uninfested areas in the designated construction right-of-way), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-22 (Protect special-status reptile species).

Alternative 2a – Under Segments G and 2a, there would be direct or indirect effects to coast horned lizard, expected to be present due to several individuals identified within 0.5 mile by POWER in 2009 and 2010. Tower construction and grading of new or existing access roads would result in habitat and

vegetation loss, and may result in direct injury or mortality of individuals. Removal of chaparral for the grading of access roads or tower sites would reduce or degrade suitable habitat for this species. Additionally, any coast horned lizards that go undetected by preconstruction surveys—dictated by mitigation measure BIO-22—and are present under vegetation, on roads, or in burrows, may be crushed by foot traffic, vehicles, or heavy equipment. Furthermore, any excavations that are conducted and left open during the day or overnight would pose a risk to any coast horned lizards, which may fall into them. It is expected that the risk of falling into an open hole would be greater overnight, as the construction noise and vibrations would be more likely to keep any coast horned lizards from approaching too close to the active site during the day. The construction work may also lead to dispersal of individuals from the area, potentially leading to an increased risk of predation or competition if any animals are forced to relocate to unfamiliar territory.

General practices that would reduce short- or long-term effects to coast horned lizard include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short- or long-term effects to coast horned lizard include include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of Existing Water Crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds into previously uninfested areas in the designated construction right-of-way), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-22 (Protect special-status reptile species).

Alternative 3 – Under Segment I, there would be direct or indirect effects to coast horned lizard, expected to be likely to occur due to reported occurrences within two miles of the proposed ROW (CDFG 2010). Tower construction and grading of new or existing access roads would result in habitat and vegetation loss, and may result in direct injury or mortality of individuals. Removal of chaparral for the grading of access roads or tower sites would reduce or degrade suitable habitat for this species. Additionally, any coast horned lizards that go undetected by preconstruction surveys—dictated by mitigation measure BIO-22—and are present under vegetation, on roads, or in burrows, may be crushed by foot traffic, vehicles, or heavy equipment. Furthermore, any excavations that are conducted and left open during the day or overnight would pose a risk to any coast horned lizards, which may fall into them. It is expected that the risk of falling into an open hole would be greater overnight, as the construction noise and vibrations would be more likely to keep any coast horned lizards from approaching too close to the active site during the day. The construction work may also lead to dispersal of individuals from the area, potentially leading to an increased risk of predation or competition if any animals are forced to relocate to unfamiliar territory.

General practices that would reduce short- or long-term effects to coast horned lizard include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short- or long-term effects to coast horned lizard include include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of Existing Water Crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds into previously uninfested areas in the designated construction right-of-way), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-22 (Protect special-status reptile species).

Reconductoring

The reconductoring would occur along Segments A, B, G, and K. Segment G is analyzed in detail for coast horned lizard impacts in the preceding section under new 230 kV transmission line Alternatives 2 and 2a. Potential risks to this species as a result of reconductoring the existing transmission line would be a factor regardless of which alternative is ultimately chosen for construction, as this is a required component of BRRTP.

New 230 kV Circuit

Under Segment J, there would be direct or indirect effects to coast horned lizard, expected to be present due to two sightings within 1.5 miles of the proposed ROW (CDFG 2010). Tower construction and grading of new or existing access roads would result in habitat and vegetation loss, and may result in direct injury or mortality of individuals. Removal of chaparral for the grading of access roads or tower sites would reduce or degrade suitable habitat for this species. Additionally, any coast horned lizards that go undetected by preconstruction surveys—dictated by mitigation measure BIO-22—and are present under vegetation, on roads, or in burrows, may be crushed by foot traffic, vehicles, or heavy equipment. The construction work may also lead to dispersal of individuals from the area, potentially leading to an increased risk or predation or competition if any animals are forced to relocate to unfamiliar territory. Potential risks to this species as a result of adding a new 230 kV circuit to the existing transmission line would be a factor regardless of which alternative is ultimately chosen for construction, as this is a required component of BR RTP.

Operation and Maintenance

Operation and maintenance of the proposed transmission lines would pose minimal threat to the coast horned lizard. Ground and air monitoring of the lines would not impact potential habitat along Dry Canyon. Temporary increased dust may occur and result in negligible impacts. Occasional road grading in the ROW on access roads and spur roads as required for safe vehicular access would not affect this species unless it were basking in the road and had reduced energy to escape. During emergency operations, temporary disturbance may occur but would be minimized through emergency operation procedures, such as briefing crews on sensitive animal procedures, and minimized operations in sensitive habitats, as conditions permit. Potential risks to this species as a result of operation and maintenance of the Project would be a factor regardless of which alternative is ultimately chosen for construction, as this is a required component of BR RTP.

Effects Determination

Alternative 1: The new 230 kV transmission line, reconductoring, the new 230 kV circuit, and operation and maintenance **may affect individuals of, but is not likely to result in a trend toward federal listing or loss of viability for**, the coast horned lizard.

Alternative 2: The new 230 kV transmission line, reconductoring, the new 230 kV circuit, and operation and maintenance **may affect individuals of, but is not likely to result in a trend toward federal listing or loss of viability for**, the coast horned lizard.

Alternative 2a: The new 230 kV transmission line, reconductoring, the new 230 kV circuit, and operation and maintenance **may affect individuals of, but is not likely to result in a trend toward federal listing or loss of viability for**, the coast horned lizard.

Alternative 3: The new 230 kV transmission line, reconductoring, the new 230 kV circuit, and operation and maintenance **may affect individuals of, but is not likely to result in a trend toward federal listing or loss of viability for**, the coast horned lizard.

5.0 CUMULATIVE EFFECTS

Cumulative effects would result from incremental impacts of the Proposed Action or its alternatives when added to other past, present, and reasonably foreseeable future actions within the designated region of influence. Cumulative effects for biological resources apply to both plant and wildlife species and must take into account known distribution, availability of preferred habitat, designated critical habitat, local population size, and likely responses to effects for each species that is considered.

Potential cumulative impacts to the environment were addressed that could be associated with the implementation of the Project in conjunction with one or more past, present, or reasonably foreseeable future actions or projects. BLM's NEPA Handbook states that "cumulative impacts can be categorized as additive and interactive. An additive impact emerges from persistent additions from one kind of source whether through time or space. An interactive impact results from more than one kind of source." Cumulative impacts can result from individually minor, but collectively significant, actions taking place over a period of time.

Cumulative impacts are most likely to arise when a relationship exists between a proposed alternative and other actions that have, or are expected, to occur in a similar location or time period, or involve similar actions. Projects in close proximity to the Proposed Action and alternatives would be expected to have more potential for cumulative impacts than those more geographically separated.

5.1 IMPACT AREA

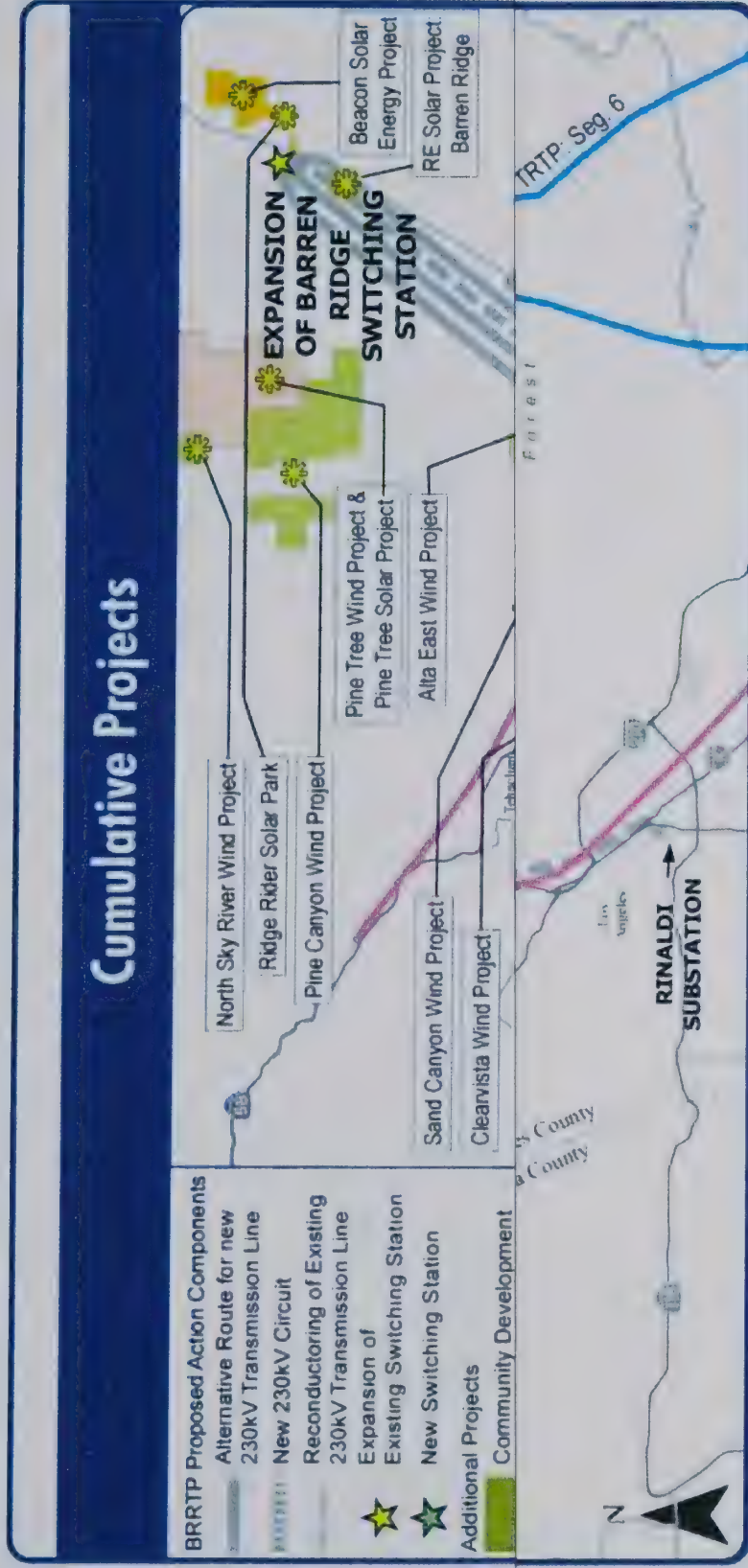
The region of influence for BRRTP's biological cumulative effects is defined as any small project within five miles of the proposed segments, as well as any large projects in BRRTP's vicinity (e.g., solar development, wind development) that are farther than five miles from its Project area. This five-mile boundary is assumed to account for impacts to most plants' dispersion area and most animals' migration corridors or individual home ranges.

5.2 PAST, PRESENT AND REASONABLY FORESEEABLE ACTIONS

The Cumulative Projects map (Figure 8) illustrates the locations of the major cumulative projects in the BRRTP area. Because this document only considers impacts to Forest Service Sensitive species, only projects located on the Forest are considered for analysis of cumulative effects below. The list of projects considered in this document includes: 1) Electricity Transmission Projects; 2) Transportation and Public Facilities Projects; and 3) Maintenance/Landscaping Projects.

It is expected that BRRTP's cumulative effects would apply to both special-status plant and wildlife species. These species are listed according to regulations set by the Forest Service. Two sensitive plant species were observed within the ANF, while none were identified on areas surveyed outside the ANF. However, there may be additional sensitive plants within the ANF or outside the ANF that may be affected by BRRTP, including species that were not identified during surveys, or they may occur on lands not surveyed. These species may in turn be affected by other past, present, or future projects such as those described in Chapter 5 of the Draft EIS/EIR, especially those which occur in the ANF (USFS/BLM/LADWP 2011b). Additionally, there is the potential for numerous special-status animals to occur and be affected by BRRTP.

FIGURE 8. CUMULATIVE PROJECTS



BARREN RIDGE RENEWABLE TRANSMISSION PROJECT



5.0 CUMULATIVE EFFECTS

Cumulative effects would result from incremental impacts of the Proposed Action or its alternatives when added to other past, present, and reasonably foreseeable future actions within the designated region of influence. Cumulative effects for biological resources apply to both plant and wildlife species and must take into account known distribution, availability of preferred habitat, designated critical habitat, local population size, and likely responses to effects for each species that is considered.

Potential cumulative impacts to the environment were addressed that could be associated with the implementation of the Project in conjunction with one or more past, present, or reasonably foreseeable future actions or projects. BLM's NEPA Handbook states that "cumulative impacts can be categorized as additive and interactive. An additive impact emerges from persistent additions from one kind of source whether through time or space. An interactive impact results from more than one kind of source." Cumulative impacts can result from individually minor, but collectively significant, actions taking place over a period of time.

Cumulative impacts are most likely to arise when a relationship exists between a proposed alternative and other actions that have, or are expected, to occur in a similar location or time period, or involve similar actions. Projects in close proximity to the Proposed Action and alternatives would be expected to have more potential for cumulative impacts than those more geographically separated.

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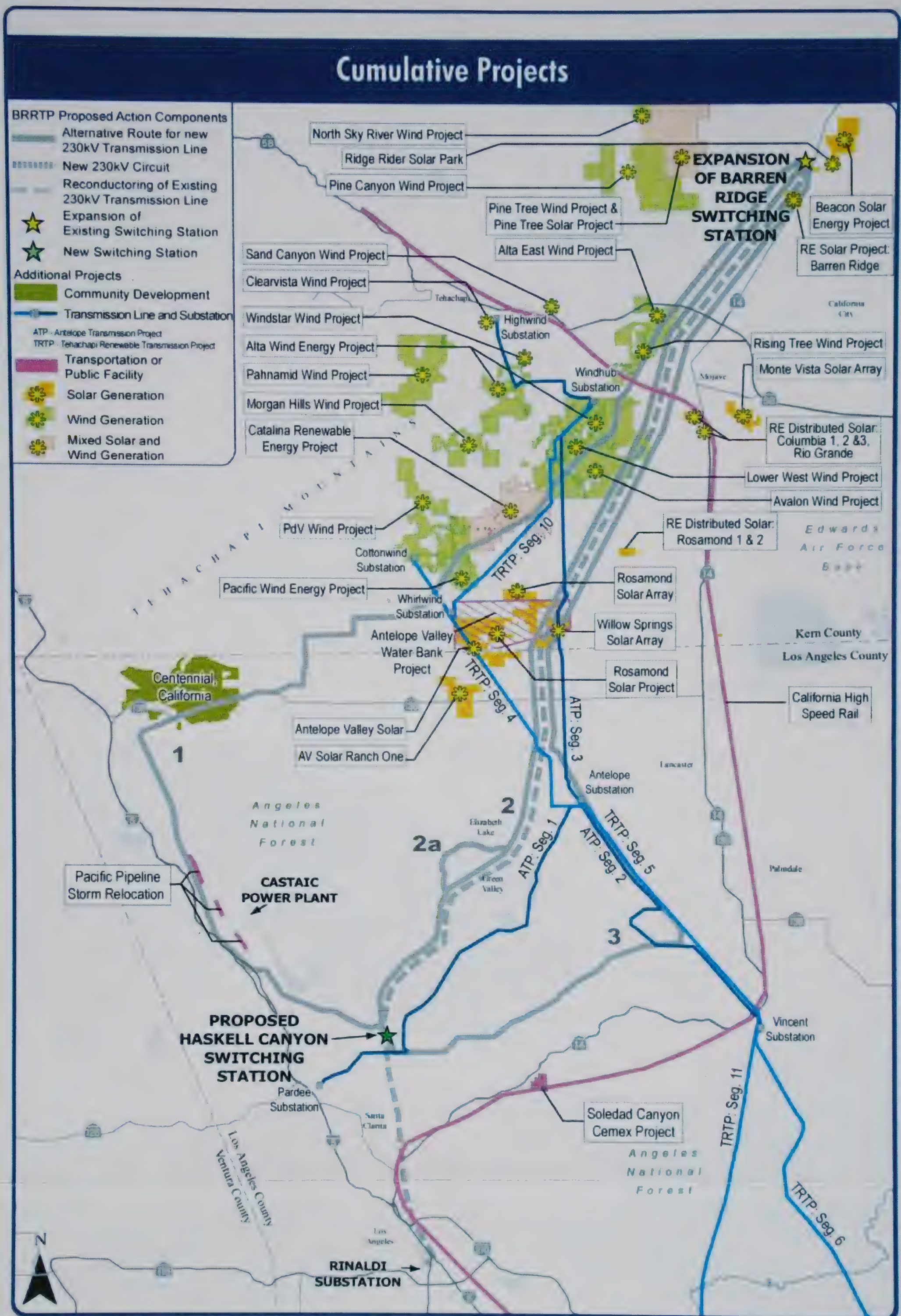
The region of influence for BRRTP's biological cumulative effects is defined as any small project within five miles of the proposed segments, as well as any large projects in BRRTP's vicinity (e.g., solar development, wind development) that are farther than five miles from its Project area. This five-mile boundary is assumed to account for impacts to most plants' dispersion area and most animals' migration corridors or individual home ranges.

5.2 PAST, PRESENT AND REASONABLY FORESEEABLE ACTIONS

The Cumulative Projects map (Figure 8) illustrates the locations of the major cumulative projects in the BRRTP area. Because this document only considers impacts to Forest Service Sensitive species, only projects located on the Forest are considered for analysis of cumulative effects below. The list of projects considered in this document includes: 1) Electricity Transmission Projects; 2) Transportation and Public Facilities Projects; and 3) Maintenance/Landscaping Projects.

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FIGURE 8. CUMULATIVE PROJECTS



Numerous projects are in various stages of planning and development within the Project vicinity. Below are brief descriptions of those which occur within the ANF and which are either within five miles of the BRRTP or are very large projects (such as the transmission projects).

5.2.1 Transmission Projects

Antelope Transmission Project (ATP) – Construction of Southern California Edison's (SCE's) proposed Antelope Transmission Project is underway and will proceed in three sequential segments. Segment 1 construction and energization has been completed. Construction of the remaining two segments is expected to be completed in 2010.

Segment 3 of the Antelope-Tehachapi Transmission Line consists of two phases. The first phase would involve the construction of a new 26.1 mile 500 kV transmission line between the Antelope Substation and a proposed new substation in the Mojave area (Substation 1). Similar to Segments 1 and 2, this line would be initially energized at 220 kV and upgraded to meet future needs. The second phase would involve the construction of a new 9.4 mile 220 kV transmission line from the proposed Substation 1 to a proposed new substation in the Monolith area.

Tehachapi Renewable Transmission Project (TRTP) – SCE is proposing to construct the TRTP, which would involve new and upgraded transmission infrastructure along approximately 173 miles of new and existing rights-of-way in southern Kern County, portions of Los Angeles County including the ANF, and the southwestern portion of San Bernardino County. Stated objectives for the project include providing the electrical facilities necessary to integrate levels of wind generation in excess of 700 MW and up to approximately 4,500 MW in the Tehachapi Wind Resource Area. The environmental review process for the project is currently underway, and construction is estimated to be completed in 2013. The project is composed of Segments 4 through 11; however, only Segments 4, 5, and 10 are located within the Project area.

Segment 4 would consist of constructing two new single-circuit 220 kV transmission lines within four miles of new ROW between the Cottonwood Substation and proposed Whirlwind Substation. SCE also proposes construction of a new single-circuit 500 kV transmission line within 16 miles of new ROW between the Antelope Substation and proposed Whirlwind Substation.

5.2.2 Transportation and Public Facilities

Pacific Pipeline Storm Relocation Project and Access Road Repairs – Pacific Pipeline is proposing to relocate several miles of crude oil pipeline to more stable ground within the ANF (USFS 2011).

Old Ridge Route Storm Damage Repairs – The ANF is proposing to repair and maintain seven locations along the length of the Old Ridge Route from West Oakdale Canyon Road to Templin Highway. The road has been damaged by several years of rain damage (USFS 2011).

LA County Templin Highway and Drainage Project at MM 3.80 – The Los Angeles Department of Public Works is proposing to repair a damaged section of Templin Highway overlooking Castaic Creek. This operation would also involve repairing and improving the catch basin and drainage system at this location (USFS 2011).

5.2.3 Maintenance and Landscape Management Projects

Black Oak Mistletoe Project – The Forest Service is proposing to restore stands of black oaks along Forest Road 7N23 by managing the mistletoe infestation in the area. Several eradication techniques will be used. Understory planting will also occur to help promote native restoration (USFS 2011).

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5.2.3 Maintenance and Landscape Management Projects

Black Oak Mistletoe Project – The Forest Service is proposing to restore stands of black oaks along Forest Road 7N23 by managing the mistletoe infestation in the area. Several eradication techniques will be used. Understory planting will also occur to help promote native restoration (USFS 2011).

Buffer OHV Restoration Project – The Forest Service is proposing to restore areas in the vicinity of Texas Canyon and Rowher Canyon that have been previously damaged by unauthorized OHV use. Botanical, wildlife, and archaeological surveys in the area have not been completed (USFS 2011).

Elizabeth Tunnel Repair Project – In fall of 2009, LADWP repaired the entrance to the Elizabeth Tunnel in South Portal Canyon. This consisted of digging up sediment that had slid off the entrance to the tunnel, which is normally concealed by a dirt wall, and replacing it at the tunnel's entrance.

Jupiter Fuelbreak Project – The Forest Service proposes to re-establish an existing fuel break that begins southwest of the unincorporated community of Green Valley and travels east, bisecting Jupiter Mountain, before heading south to Bouquet Reservoir.

Lake Hughes Plantation Restoration Project – The proposed project would restore unauthorized off-highway vehicle trails at the Christian and Taylor Plantations located within the ANF in order to reduce soil erosion, the spread of weeds, destruction of native plants, soil compaction, and wildlife habitat loss. Proposed actions include recontouring and decompacting soils, reseeding with native species, and reinforcing check dams. The project was approved by the District Ranger in 2009 and scheduled for implementation in January 2010 (USFS 2011).

Pelona OHV Restoration Project – The Forest Service is proposing to restore areas in the vicinity of Bouquet Canyon that have been previously damaged by unauthorized OHV use. Botanical, wildlife, and archaeological surveys in the area have not been completed (USFS 2011).

Portal Ridge Restoration Project – The Forest Service is proposing to place barriers along Portal Ridge to restrict unauthorized vehicle access. In addition, compacted soil would become scarified to promote plant growth and signs would be installed to dissuade the public from trespassing (USFS 2011).

Power Plant 2 Tailings Removal Project – In spring and summer 2009, LADWP removed tailings material—left from the aqueduct construction—from the hillside above Power Plant 2 (PP2). The material was lifted off the hillside and deposited in two fill sites located on the ridge in areas that were not at risk of eroding. Slender mariposa lily was present on-site and removed for the duration of construction.

San Francisquito/Bouquet Creek Weed Removal Project – In 2010, the Forest Service removed invasive weeds along approximately 2.5 miles of stream in the San Francisquito and Bouquet Creek watersheds. This habitat was suitable for the Forest Service Sensitive species arroyo chub (USFS 2010).

Santa Clara/Mojave Rivers Ranger District Plantation Maintenance Project – The proposed project would consist of vegetation maintenance at 13 plantations located within the ANF in order to reduce wildfire risk, and improve wildlife habitat and the vitality of individual remaining trees. Proposed actions include removal of dead trees, thinning of live trees, pruning, removing weeds, and planting for reforestation where necessary. This action was approved by the District Ranger in January 2010 (USFS 2011).

Santa Clara River Watershed Invasive Plant Treatment Project – The Forest Service is proposing to eradicate, control, contain, and/or suppress existing and new infestations of invasive plant species in the Santa Clara/Mojave River Watershed by the use of herbicides, manual, mechanical, biological, and fire methods (USFS 2011).

South Portal Restoration Project – The Forest Service is proposing to place barriers along Forest Road 7N02 in South Portal Canyon to restrict unauthorized vehicle access. In addition, compacted soil would become scarified to promote plant growth and signs would be installed to dissuade the public from trespassing (USFS 2011).

Tule Ridge/South Portal Fuels Reduction Project – The Forest Service proposes fuels reduction and re-establishment of a fuel break to provide protection to unincorporated community of Green Valley. The project would also enhance wildlife for mammals and birds (USFS 2011).

5.3 DIRECT AND INDIRECT IMPACTS SUMMARY

Both direct and indirect impacts are expected to occur to vegetation and wildlife. Direct impacts are defined as those that occur at the same time and place as BRRTP or the surrounding projects described in Section 4.2. Indirect impacts are defined as those which could be caused by BRRTP or surrounding projects, but which would occur at a later time or occur at a distance farther removed from the direct construction corridor. While all of the direct and indirect impacts below could possibly occur due to BRRTP, not all may necessarily apply to each project listed in Section 4.2. However, any common direct or indirect impacts between BRRTP and any of the above-listed projects would exert cumulative effects of varying degrees on certain species or groups of species.

Direct Impacts

- Habitat loss, fragmentation, or degradation (short-term and long-term);
- Direct injury or mortality;
- Disturbance of special-status plants or animals (dust deposition on or crushing of plants, disturbance of an animal's daily activities or natural history); and
- Dispersal of local wildlife (including mortality of young for nesting wildlife).

Indirect Impacts

- Habitat degradation (spread of non-native plant species, soil compaction);
- Indirect injury or mortality (dispersal leading to increased predation risk and/or competition, ingestion of construction debris);
- Disturbance of special-status plants (loss of plant vigor due to dust or mud deposition);
- Reduction in water quality due to insufficient erosion control; and
- Avian collisions and/or electrocutions.

5.4 CUMULATIVE EFFECTS EVALUATION

Cumulative effects are evaluated below for each listed species that may be affected by BRRTP and surrounding projects.

Slender Mariposa Lily (*Calochortus clavatus* var. *gracilis*) – The Forest Service sensitive slender mariposa lily has been identified on all Alternatives. Cumulative effects may be projected onto this species with the combined influence of BRRTP and the Pacific Pipeline Storm Relocation Project on Alternative 1 and LADWP's Power Plant Two (PP2) Tailings Removal Project, the Santa Clara/Mojave Rivers Ranger District Plantation Maintenance Project, SCE's Antelope Transmission Project (ATP), and SCE's Tehachapi Renewable Transmission Project (TRTP) on Alternatives 2, 2a and 3. In addition, there are several maintenance projects in the Project's vicinity in the ANF which may contribute to cumulative effects on this species. The Pacific Pipeline Storm Relocation Project, located east of Alternative 1, will relocate several miles of crude oil lines to different locations and will likely result in some habitat loss to this species, although the specific amount is unknown (USFS 2010). It is unknown if this will impact the approximately one dozen individuals that were identified on Alternative 1 during BRRTP botanical surveys (POWER 2010c), but would still result in a loss of habitat. LADWP's PP2 Tailings Removal Project, located west of Alternatives 2 and 2a, resulted in the removal of approximately 150 individual slender mariposa lilies from its project area. However, while approximately 2,400 individuals and nearly 1,700 individuals—with some overlap—were located on Alternative 2 during BRRTP botanical surveys in 2008 and 2009, respectively (POWER 2008b, POWER 2010c), none of these were part of the

individuals removed during the PP2 Tailings Removal Project. Two of the plantations—Hollow Tree and Artesian Springs—that recently underwent vegetation and habitat management had over 100 impacted slender mariposa lilies located at each (K. VinZant personal communication 2011). Approximately 5,000 slender mariposa lilies, as well as several acres of suitable habitat, were impacted by SCE's ATP, located in between Alternatives 1 and 2/2a. Over 400 individuals were located on Alternative 3 during BR RTP botanical surveys, and would be impacted by habitat loss and degradation if not also individual removal, depending on specific plant locations (POWER 2008b). The effects from these three projects would exert a cumulative effect with BR RTP on slender mariposa lily by reducing the overall local population and also removing and degrading appropriate habitat. SCE's TRTP, located east and southeast of BR RTP, estimated that it was unlikely for slender mariposa lily to be present within TRTP Segments 4 and 5, but that individuals could possibly be present on Segments 6 and 11 due to nearby populations (Aspen 2009). Both of the latter TRTP segments are located within the ANF south of California SR 14. Loss of individuals or of habitat in these areas would exert a cumulative effect with BR RTP on slender mariposa lily by reducing the overall regional population and/or habitat.

Several other projects are located in the vicinity of the BR RTP in the ANF. While the Elizabeth Tunnel repair project conducted in fall 2009 was in an area surrounded by chaparral vegetation, the specific project work resulted in little, if any, impact to the chaparral on the slopes. The weed removal within San Francisquito and Bouquet Creeks by Forest Service staff had no effect on slender mariposa lily because there was no suitable habitat for it within the project area. The Jupiter Fuelbreak Project and Tule Ridge/South Portal Fuels Reduction Project may result in loss of habitat for this species in the areas where vegetation is cleared. Some projects, like the Black Oak Mistletoe Project, Buffer OHV Restoration Project, Pelona OHV Restoration Project, Portal Ridge Restoration Project, and South Portal Restoration Project may benefit the slender mariposa lily by directly improving habitat conditions or by indirectly improving habitat conditions by restricting human access.

Effects from BR RTP would be minimized by the implementation of mitigation measures BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds into previously uninfested areas in the designated construction right-of-way), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-13 (Protect special-status plant species and their habitat). Cumulative effects on slender mariposa lily between BR RTP and past, present, and foreseeable projects would be significant.

Short-joint Beavertail (*Opuntia basilaris* var. *brachyclada*) – The Forest Service and BLM sensitive short-joint beavertail has been identified on all Alternatives. Cumulative effects may be projected onto known populations of this species with the combined influence of BR RTP and the Pacific Pipeline Storm Relocation Project on Alternative 1 and LADWP's PP2 Tailings Removal Project, SCE's ATP, and SCE's TRTP on Alternative 2, 2a and 3. The Pacific Pipeline Storm Relocation Project, located east of Alternative 1, will relocate several miles of crude oil lines to different locations and will likely result in some habitat loss to this species, although the specific amount is unknown (USFS 2010). It is unknown if this will impact the 40 individuals that were identified on Alternative 1 during BR RTP botanical surveys (POWER 2010c), but it would still result in a loss of habitat. LADWP's PP2 Tailings Removal Project, located west of Alternatives 2 and 2a, did not have any identified individuals of this species, although suitable habitat was removed during the project. During 2008 and 2009 BR RTP botanical surveys, 84 short-joint beavertail individuals were identified along Alternatives 2 and 2a (POWER 2008b, POWER 2010c) which would likely be affected by BR RTP construction, resulting in a combined effect of habitat loss in both areas. No short-joint beavertails were located during botanical surveys for SCE's ATP (LSA 2007e, LSA 2007f, LSA 2007g), but appropriate habitat for this species was impacted during construction. Five individuals were located on Alternative 3 during BR RTP botanical surveys, and would be impacted by habitat loss and degradation if not also individual removal, depending on specific plant locations (POWER 2008b). SCE's TRTP, located east and southeast of BR RTP, estimated that it was likely for short-joint beavertail to be present within TRTP Segment 5, and that individuals are present on

Segments 6 and 11 (Aspen 2009). TRTP Segment 5 originates in the southern section of ANF and runs adjacent to Alternative 3; TRTP Segments 6 and 11 are located within the southern section of ANF. Loss of individuals or of habitat in any of these areas would exert a cumulative effect with BRRTP on short-joint beavertail by reducing the overall local and regional population and/or habitat.

Some additional projects are located in the vicinity of the BRRTP. While the Elizabeth Tunnel repair project conducted in fall 2009 was in an area surrounded by chaparral vegetation, the specific project work resulted in little, if any, impact to the chaparral on the slopes. The weed removal within San Francisquito and Bouquet Creeks by Forest Service staff had no effect on short-joint beavertail because there was no suitable habitat for it within the project area. The Jupiter Fuelbreak Project and Tule Ridge/South Portal Fuels Reduction Project may result in loss of habitat for this species in the areas where vegetation is cleared. Some projects, like the Black Oak Mistletoe Project, Buffer OHV Restoration Project, Pelona OHV Restoration Project, Portal Ridge Restoration Project, and South Portal Restoration Project may benefit the short-joint beavertail by directly improving habitat conditions or by indirectly improving habitat conditions by restricting human access.

While no botanical surveys were conducted on new 230 kV circuit corridor and reconductoring corridor south of Haskell Canyon, there may be existing habitat for or individuals of this species on these corridors. Effects from BRRTP would be minimized by the implementation of mitigation measures BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds into previously uninfested areas in the designated construction right-of-way), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-13 (Protect special-status plant species and their habitat). Cumulative effects on short-joint beavertail between BRRTP and past, present, and foreseeable projects would not be significant if properly mitigated.

Other Sensitive Plant Species – There are many Forest Service Sensitive plant species that may occur in the BRRTP area, only two (slender mariposa lily and short-joint beavertail) of which were identified during 2008, 2009, and 2010 botanical surveys. The Sensitive plant species that may occur in the Project area are described in Table 5 for each Alternative and segment. Large populations or many scattered individuals of sensitive plant species may have gone undetected in the limited surveys that were conducted. Direct impacts that may occur to these species include habitat loss and degradation due to construction activities and disturbance due to dust deposition or crushing (but not removal) of vegetation. Dust deposition may lead to reduced plant vigor if the plants are unable to sufficiently photosynthesize. Indirect impacts to this species include soil compaction from excessive activity and spread of non-native weed species as a result of seeds stuck to vehicles. Soil compaction may prevent sufficient water from reaching the roots of plants, which can lead to mortality or a reduction in vigor of the plant. Non-native weed species tend to follow disturbance and can spread through vehicle tires or be carried by the wind from nearby established populations. With the amount of disturbance that may occur with this Project where new roads or tower sites are created, there could be a potentially large amount of non-native weed seeds spreading into bare or disturbed areas. Surrounding projects, whether large or small, result in some quantity of habitat loss and/or spread of non-native weeds, which in turn makes it difficult for native plants to establish and can affect whole habitats.

There are several transmission line, wind, or solar energy projects within the BRRTP vicinity along the ANF, Antelope Valley, and Mojave Desert. These include the Beacon Solar Energy Project, Pine Canyon Wind Project, Pine Tree Solar Project, Windstar Wind Energy Project, Alta-Oak Creek Mojave Project, PdV Wind Energy Project, AV Solar Ranch One, TRTP, ATP, and various parcels of land for which the BLM has applied to develop for wind or solar generation. Additional projects in the BRRTP area include the Antelope Valley Water Bank Project, the California High Speed Rail, the construction of the community of Centennial, the Pacific Pipeline Storm Relocation, the ongoing Castaic Power Plant Sediment Removal, the PP2 Tailings Removal Project, the Elizabeth Tunnel repair, the Tule Ridge, Green Valley, and Leona Divide Fuelbreaks, the Hollow Tree and Artesian Springs Tree Plantation Fuel

Removal projects, the Bouquet Creek Weed Removal Project, and the Grapevine Creek Streambed Diversion Project. All of these projects have or will result in vegetation loss and, although efforts are made to identify special-status plant species for avoidance before construction begins, some individuals may have been or may be missed, resulting in individual losses. It is not expected that any of these individual projects will lead to a change in listing status of any of these plants, but considered cumulatively they may be more significantly affected in local or regional populations of species.

Effects from BR RTP would be minimized by the implementation of mitigation measures BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds into previously uninfested areas in the designated construction right-of-way), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-13 (Protect special-status plant species and their habitat). However, large populations or many scattered individuals of sensitive plant species may have gone undetected in the limited surveys that were conducted along all the Alternatives, especially in more dense or inaccessible chaparral. Therefore, cumulative effects on special-status plant species between BR RTP and past, present, and foreseeable projects may be significant.

Swainson's Hawk (*Buteo swainsonii*) – The Forest Service Sensitive and State Threatened Swainson's hawk has the potential to occur in the BR RTP area as part of its winter range or as part of a flyover on its way to South America. It was observed during surveys on Segment G in 2009 and could also occur throughout the BR RTP area within the Antelope Valley. It is unlikely that any direct injury or mortality would occur to this species as a result of BR RTP, as Swainson's hawk is not believed to be present in the area during breeding season. However, habitat loss will occur as grassland and agricultural areas are bladed to construct access roads and tower sites. This may have an effect on foraging capabilities. New transmission towers will pose a risk of electrocution and collision if not properly designed and mitigated. There are no projects in the vicinity of Segment G that would affect Swainson's hawk except for SCE's Antelope-Pardee 500 kV Transmission Line Project. This project was estimated to have approximately 315 acres of suitable foraging habitat within the ANF that could be affected, but it was determined that due to foraging travel distances and overall regional habitat suitability, effects on habitat from project implementation would be limited (Aspen 2006). SCE also estimated that implementation of prescribed transmission tower designs as described by APLIC (2006) would prevent bird—including raptor—electrocutions and that bird collisions would not substantially increase from pre-project conditions (Aspen 2006). During construction, five active Swainson's hawk nests were detected in the vicinity of the new transmission line (Aspen 2009). In addition to effects from ATP, various projects on the ANF to establish or restore firebreaks or to revegetate disturbed areas may negatively or positively affect Swainson's hawk foraging habitat, respectively. These include projects such as the Jupiter Fuelbreak Project; the Pelona OHV, Portal Ridge, and South Portal Restoration Projects; the Santa Clara/Mojave Rivers Ranger District Plantation Maintenance Project; and the Tule Ridge/South Portal Fuels Reduction Project. Because several of these projects are in close proximity to the proposed BR RTP ROW, particularly Alternative 2a, there would be a cumulative loss of habitat where habitat is being removed or degraded for multiple projects. General practices and mitigation measures to protect Swainson's hawk would be implemented during construction of the BR RTP. General practices that would reduce short-term or long-term effects to Swainson's hawk include GP-8, GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to Swainson's hawk include HYD-1 (Use of Existing Water Crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds into previously uninfested areas in the designated construction right-of-way), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-7 (Impacts to raptors), and BIO-11 (Reduce avian collisions with and electrocutions on transmission lines).

Peregrine Falcon (*Falco peregrinus*) – The Forest Service Watch List and State Endangered peregrine falcon is not known to occur in the BR RTP area, but has the potential to occur along several segments in the ANF due to habitat availability, although nesting habitat may be limited by a lack of cliff-type areas. Because its habitat is primarily located in riparian areas, there will likely only be a small amount of habitat loss from BR RTP, as riparian areas and water bodies will be impacted as minimally as possible. The Antelope-Pardee 500 kV Transmission Project also identified a potential for peregrine falcon to occur, although it also cited a lack of nesting habitat. Based on the alignment for the Antelope-Pardee transmission corridor, impacts to peregrine falcon habitat were likely negligible, as riparian habitat is scarce. Peregrine falcon was identified as present or possibly present on several segments of the TRTP, mainly as migrants. Construction in these areas may result in habitat loss depending on where the habitat is located in relation to construction plans. However, peregrine falcon has a very large yearlong range covering almost all of the California coast and about half of the eastern side of California, and a winter range covering most of California's interior (CDFG 2008), and therefore will likely be largely unaffected by the relatively small amounts of habitat that will be lost around these project areas. Construction of all three of these transmission projects may benefit peregrine falcon by providing roosting sites or nesting sites on the towers, but at the same time may increase the risk to the species—as with all raptors—of collision, which will require appropriate mitigation and tower designs. Plans by the Forest Service to remove weeds and restore riparian habitat in the ANF may improve habitat for this species if suitable cliff habitat is present nearby for nesting. This would include projects such as the Santa Clara River Watershed Invasive Plant Treatment Project. Effects to riparian areas from the BR RTP may cause cumulative impacts with these projects where riparian habitat is being affected. In some cases the net change may be positive where habitat is being greatly improved. However, suitable cliff habitat is not in abundance in the riparian areas that are within or adjacent to the BR RTP. General practices and mitigation measures to protect peregrine falcon would be implemented during construction of the BR RTP. General practices that would reduce short-term or long-term effects to peregrine falcon include GP-8, GP-24, GP-40, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to peregrine falcon include BIO-2 (Prevent the spread of invasive weeds into previously uninfested areas in the designated construction right-of-way), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-7 (Impacts to raptors), and BIO-11 (Reduce avian collisions with and electrocutions on transmission lines).

Bald Eagle (*Haliaeetus leucocephalus*) – The Forest Service sensitive and State Endangered bald eagle has the potential to occur near BR RTP Segments D and J, where there is a large, open body of water at Castaic Reservoir. Direct impacts to this species include habitat loss for construction of access roads and tower sites, as well as disruption from construction. Indirect impacts may include increased risk of electrocution and collision with transmission towers unless properly designed and mitigated. Overall impacts to bald eagle from BR RTP will be small due to the overall lack of suitable habitat in the Project area, the general lack of sightings on ANF, and the degree of existing disturbance such as at the Castaic Lake State Recreation Area. No impacts from SCE's Antelope-Pardee 500 kV Transmission Line Project were expected and this species was not described in detail in project documents (Aspen 2006). Long-term impacts from SCE's TRTP include increased risk of electrocution and collision as a result of new transmission lines; however, towers and lines for TRTP will be designed and constructed according to raptor-safety guidelines suggested by APLIC (2006). Numerous other projects are located near Segments D and J, including the Pacific Pipeline Storm Relocation, LADWP's Castaic Power Plant Sediment Removal Project, LADWP's PP2 Tailings Removal Project, the Old Ridge Route Storm Damage Repairs, the LA County Templin Highway and Drainage Project, and Forest Service Bouquet and San Francisquito Creeks weed removal efforts. However, none of these projects is in an area of suitable habitat for the bald eagle. The Pacific Pipeline Storm Relocation will be in areas near to the proposed Segment D centerline, but would not affect flight patterns or any available nesting habitat for the bald eagle. No other projects in the BR RTP vicinity are expected to impact the bald eagle based on the general lack of suitable habitat and

lack of projects in areas which are in suitable habitat. Cumulative effects would therefore likely be low. General practices and mitigation measures to protect bald eagle would be implemented during construction of the BRRTP. General practices that would reduce short-term or long-term effects to bald eagle include GP-8, GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to bald eagle include include HYD-1 (Use of Existing Water Crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds into previously uninfested areas in the designated construction right-of-way), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-7 (Impacts to raptors), BIO-11 (Reduce avian collisions with and electrocutions on transmission lines), and BIO-17 (Protect the bald eagle and golden eagle).

California Spotted Owl – The Forest Service Sensitive, BLM Sensitive, and CDFG Species of Special Concern California spotted owl has a possibility of occurring on Alternatives 2 and 2a and is unlikely to occur on Alternative 1. It is possible that there would be degradation or loss of habitat for this species where trees are required to be trimmed or possibly removed, and that construction activities both in trees or around tower or access road construction areas may lead to owls becoming injured, killed, or vacating the areas temporarily or permanently. The California spotted owl was estimated to have a moderate potential to occur within the project area for SCE's ATP, with possible effects ranging from removal of habitat for nesting birds to abandonment due to construction presence to loss of foraging habitat (Aspen 2006). SCE's TRTP is expected to affect 43 acres of montane conifer forest (California spotted owl habitat) on Alternative 2 and 36 acres on Alternative 6; the species is expected to be present on Alternatives 6 and 11 (Aspen 2009). More specific effects from TRTP include direct removal of possible nest trees and foraging areas, noise from humans and construction, vehicle access through the project area, spread of invasive weeds, degradation of habitat, and increased recreational use. The Forest Service's Black Oak Mistletoe Project may benefit California spotted owls if any individuals or pairs utilize the areas that will be improved. Effects from SCE's projects may cause negative cumulative effects with the BRRTP, but Forest Service habitat improvement projects may offset some of these by improving habitat for this species in other areas. General practices and mitigation measures to protect California spotted owl would be implemented during construction of the BRRTP. General practices that would reduce short-term or long-term effects to California spotted owl include GP-8, GP-24, GP-25, GP-41, GP-42, GP-43, GP-48, GP-49, and GP-56. Mitigation measures that would reduce short-term or long-term effects to California spotted owl include include BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds into previously uninfested areas in the designated construction right-of-way), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-8 (Avoid nesting season and limit disturbance of nesting birds [non-raptor species]), BIO-11 (Reduce avian collisions with and electrocutions on transmission lines), and BIO-19 (Protect California spotted owl).

Bat Species – The special-status bat species pallid bat, Townsend's big-eared bat, and western red bat are all likely to occur on all Project alternatives. Western red bat is likely to occur on Segment J as well, while pallid bat and Townsend's big-eared bat could possibly occur on this component. These species will possibly be affected by the construction of BRRTP that may occur in the vicinity of roosting habitat, such as rocky areas or buildings and structures, or foraging habitat such as riparian zones or grassy or shrubby areas. Potential effects from the BRRTP include injury, mortality, habitat loss or degradation, disruption of foraging or roosting, and abandonment of colonies. Previous development and recreation in and around the ANF has degraded and removed habitat for these species. SCE's TRTP is expected to also have an effect on bats roosting near transmission towers and possibly on roosting colonies if present and undetected, although TRTP's mitigation measures will require detected colonies to be flagged and avoided (Aspen 2009). Other future habitat restoration projects such as the Buffer OHV, Pelona OHV,

Portal Ridge, and South Portal Restoration Projects may benefit these species if they result in an increase in shrubby foraging habitat. Projects such as the Santa Clara River Watershed Invasive Plant Treatment Project will improve existing riparian habitat that may benefit these species, particularly the western red bat which utilizes riparian zones (Reid 2006). However, fuelbreak reestablishment projects combined with increasing urbanization, development, and recreational use may degrade or remove areas used by these species. General practices and mitigation measures to protect sensitive bat species would be implemented during construction of the BR RTP. General practices that would reduce short- or long-term effects to special-status bat species include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, GP-49, and GP-56. Mitigation measures that would reduce short- or long-term effects to special-status bat species include include HYD-1 (Use of Existing Water Crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds into previously uninfested areas in the designated construction right-of-way), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-21 (Protect sensitive bat species).

Tehachapi Pocket Mouse – The Forest Service Sensitive and CDFG Species of Special Concern Tehachapi pocket mouse could possibly occur on Alternatives 2, 2a, and the reconductoring component. It is unlikely to occur on Alternative 1. Potential effects as result of construction of the BR RTP include injury or death, crushing of burrows, or disruption if it is awakened by construction noise and disturbance. Areas of historical occurrences, such as Elizabeth Lake, have been developed. This species had a moderate potential to occur within the footprint of SCE's ATP, which resulted in the permanent loss of suitable habitat due to tower placement (Aspen 2006). Future fuelbreak or restoration activities within the ANF may negatively or positively impact this species should they be in suitable arid grassy or shrubby habitat. General practices and mitigation measures to protect Tehachapi pocket mouse would be implemented during construction of the BR RTP. General practices that would reduce short- or long-term effects to Tehachapi pocket mouse include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short- or long-term effects to Tehachapi pocket mouse include include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of Existing Water Crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds into previously uninfested areas in the designated construction right-of-way), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-20 (Protect American badger, Mohave ground squirrel, Tehachapi pocket mouse, and kit fox).

Arroyo Chub – The Forest Service Sensitive and CDFG Species of Special Concern arroyo chub could possibly occur on Alternatives 2 and 2a, the reconductoring component, and Segment J. Potential effects as a result of construction of the BR RTP include crushing and habitat degradation, including spread of non-native weed species, accidental spills of vehicular fluids into waterways, and destruction of breeding and spawning habitat. Similar effects are expected from the construction of SCE's TRTP, where arroyo chub is known to be present within several project segments (Aspen 2009, Aspen 2010). While suitable habitat for the arroyo chub is present within areas that were part of the San Francisquito/Bouquet Creek Weed Removal Project, it was estimated that there were no effects to the species because the work conducted in these areas did not affect the stream or water quality (USFS 2010). While little information is currently available, based on the short summaries that are available within the USFS Schedule of Proposed Actions (USFS 2011), the Santa Clara River Watershed Invasive Plant Treatment Project could have the potential to affect arroyo chub by improving its habitat conditions, depending on the locations and methodology of the treatment. Future projects that occur within San Francisquito Creek or other areas of suitable habitat or known arroyo chub occurrences would also have the potential to influence this species, negatively or positively. General practices that would reduce short-term and long-term effects to arroyo chub and its habitat include GP-3, GP-5, GP-11, GP-12, GP-17, GP-19, GP-24, GP-34, GP-35,

GP-38, GP-41, GP-42, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short-term or long-term effects to arroyo chub and its habitat include HYD-01 (Use of Existing Water Crossings), HYD-02 (New Road Construction Over Waterways), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), and BIO-6 (Implement a Worker Environmental Awareness Program).

California Legless Lizard – The Forest Service Sensitive and CDFG Species of Special Concern California legless lizard could possibly occur on Alternative 3 and on Segment J and is unlikely to occur on all other Project alternatives and components. Potential effects as a result of the construction of the BRRTP include injury or mortality to individuals which may be hiding or foraging under leaf litter or other cover, as well as habitat degradation or loss in chaparral or riparian areas. This species had a high likelihood to occur in SCE's ATP (Aspen 2006) and is likely to occur or present on several alternatives of SCE's TRTP (Aspen 2009); however, impacts to this specific species are not analyzed for either of these projects. Future activities that remove trees would reduce the amount of leaf litter for this species, which it uses to forage under and keep cool, and those which affect riparian areas may degrade habitat that this species uses for moisture, but activities which may improve arboreal habitat or improve riparian areas may benefit it. General practices and mitigation measures to protect California legless lizard would be implemented during construction of the BRRTP. General practices which would reduce short-term or long-term effects to California legless lizard include GP-3, GP-5, GP-11, GP-12, GP-17, GP-19, GP-24, GP-34, GP-35, GP-38, GP-41, GP-42, GP-43, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short-term or long-term effects to California legless lizard include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of Existing Water Crossings), HYD-2 (New Road Construction Over Waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds into previously uninfested areas in the designated construction right-of-way), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-22 (Protect special-status reptile species).

Southwestern Pond Turtle – The Forest Service Sensitive and CDFG Species of Special Concern southwestern pond turtle is expected to be present on Alternatives 2 and 2a and the reconductoring component. However, there is little habitat that could support this species along these portions of the Project, and no turtles were documented in the areas of suitable habitat—namely, Drinkwater Flat—during Project surveys. Habitat may be degraded in these areas as a result of construction and vehicle activity, and individual turtles, if present, could be harmed if undetected. LADWP's Castaic Power Plant Sediment Removal Project occurred in an area of Castaic Creek where 17 southwestern pond turtles were detected and relocated upstream and out of the project area. If these turtles return to the same area they were found, they may continue to be disturbed, relocated, or even injured or killed during future sediment removal efforts, as the project was part of an ongoing maintenance operation at Castaic Power Plant. It is unknown how large the population was and if it exceeded 17 individuals at the time of construction. These individuals are expected to be extant and in the general area, although it is unknown if they survived the relocation and overwintered at their new locations or if any individuals were preyed upon or unable to adapt. It is unlikely that they would migrate up to the BRRTP ROW or be affected by BRRTP construction given the numerous obstacles between the Project and Castaic Creek. However, any impacts to this population in the future would impact the same local population that BRRTP could impact in the unlikely scenario that BRRTP construction impacts southwestern pond turtles along Segment J. This species is also expected to be present or likely to occur in numerous segments of SCE's TRTP (Aspen 2010). It is expected that many southwestern pond turtles were killed due to the Station Fire in 2009, and that any effects from TRTP to this species may be magnified at a greater level due to their assumed

depressed numbers in the area. Possible effects to southwestern pond turtle from TRTP include crushing; loss of nesting, basking, or breeding sites; trampling; degraded habitat quality possibly resulting in loss of food sources if water is degraded; loss of habitat; disruption of breeding; and spread of non-native weeds. Any impacts to this population during construction, operation, or maintenance would impact the regional population, but not the same local populations that may be affected by BRRTP, as TRTP crosses the southern portion of the ANF opposite SR-14 from BRRTP.

Non-native plant removal operations such as the San Francisquito/Bouquet Creek Weed Removal Project and the Santa Clara River Watershed Invasive Plant Treatment Project will improve riparian habitat which may benefit this species if it is in areas that could support southwestern pond turtles, which are known to occur in San Francisquito Creek. General practices and mitigation measures to protect southwestern pond turtle would be implemented during construction of the BRRTP. General practices that would reduce short- and long-term effects to southwestern pond turtle include GP-3, GP-5, GP-11, GP-12, GP-17, GP-19, GP-24, GP-34, GP-35, GP-38, GP-41, GP-42, GP-43, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short- or long-term effects to southwestern pond turtle include include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of Existing Water Crossings), HYD-2 (New Road Construction Over Waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds into previously uninfested areas in the designated construction right-of-way), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-22 (Protect special-status reptile species).

Snake Species – The Forest Service Sensitive San Bernardino ringneck snake could possibly occur on Alternatives 2, 2a, and the reconductoring component. The Forest Service and BLM Sensitive coastal rosy boa is known to be present within Alternatives 2, 2a, and the reconductoring component and is likely to occur on Alternatives 1, 3, and Segment J. The Forest Service and BLM Sensitive and CDFG Species of Special Concern two-striped garter snake is likely to occur on Alternatives 2, 2a, and the reconductoring component and could possibly occur on Alternative 3 and Segment J. The San Bernardino ringneck snake and coastal rosy boa both had moderate potential to occur within the project area for SCE's ATP and could have suffered impacts during its construction (Aspen 2006). Two-striped garter snake had a high potential to occur in the project area, particularly in the Bouquet Creek area close to BRRTP, and individuals may have been crushed or disrupted during daily activities; additionally, riparian habitat could have been lost or degraded during construction or vehicle passage. All three species are present or likely to occur in portions of SCE's TRTP (Aspen 2009) and could be injured or killed during TRTP's construction, as well as having a decrease in suitable habitat due to construction areas, soil compaction, vegetation removal, and spread of non-native plant species. This would affect regional populations of these species given the distance between the two project areas.

Maintenance and management projects on the ANF have the potential to improve habitat quality for these species where riparian habitat is present. Non-native plant removal projects such as the San Francisquito/Bouquet Creek Weed Removal Project and the Santa Clara River Watershed Invasive Plant Treatment Project can benefit all three species, as all three will utilize riparian areas. Many of the other terrestrial management projects such as fuelbreaks and restorations may have slight effects on these species, but are probably unlikely to cause significant changes to suitable habitat for any of them, as their most common habitat elements include water and rocky areas. General practices and mitigation measures to protect these snake species would be implemented during construction of the BRRTP. General practices and mitigation measures protecting riparian habitat and water quality would help to protect areas where these species, particularly the two-striped garter snake, may be found. General practices that would reduce short- or long-term effects to San Bernardino ringneck snake, coastal rosy boa, and two-striped garter snake include GP-3, GP-5, GP-11, GP-12, GP-17, GP-19, GP-24, GP-34, GP-35, GP-38, GP-41,

GP-42, GP-43, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short- or long-term effects to San Bernardino ringneck snake, coastal rosy boa, and two-striped garter snake include include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of Existing Water Crossings), HYD-2 (New Road Construction Over Waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds into previously uninfested areas in the designated construction right-of-way), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-22 (Protect special-status reptile species).

Coast (San Diego) Horned Lizard – The Forest Service Sensitive and CDFG Species of Special Concern coast (San Diego) horned lizard is known to be present within Alternatives 1, 2, 2a, the reconductoring component, and Segment J. It is likely to occur on Alternative 3. LADWP's PP2 Tailings Removal Project removed small amounts of habitat for this species in the project's fill sites, although no individuals were observed during project construction. This species is known to be present or likely within multiple segments of SCE's TRTP. TRTP has identified many of the same threats to this species as BRRTP, citing the possibility of crushing during construction, disturbance from human activity, and habitat loss or degradation. The Antelope-Pardee 500 kV Transmission Line Project and TRTP run close to BRRTP and will exert cumulative effects on many species due to proximity, resulting in habitat loss in ANF. Individual animals may be injured or killed as a result of these projects, resulting in a cumulative reduction in local or regional populations. The effects from these projects will be long-term when considered cumulatively, as they will be constructed over several years. ANF management projects may improve or degrade suitable habitat for this species depending on the nature of the project. For example, fuelbreak projects will remove suitable habitat as they remove shrubs and chaparral that this species hides and forages under. However, OHV restoration projects will likely improve habitat by reestablishing natural vegetation and restricting human access into these areas. General practices and mitigation measures to protect the coast horned lizard would be implemented during construction of the BRRTP. General practices that would reduce short- or long-term effects to coast horned lizard include GP-24,,GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short- or long-term effects to coast horned lizard include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of Existing Water Crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds into previously uninfested areas in the designated construction right-of-way), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-22 (Protect special-status reptile species).

6.0 SUMMARY OF DETERMINATION EFFECTS

The following determination of effects to Forest Service sensitive species have been made as a result of the BRRTP:

SPECIES	DETERMINATION
Botanical Species	Alternative 1 may affect individuals of, but is not likely to result in a trend toward federal listing or loss of viability for, special-status botanical species.
	Alternative 2 may affect individuals of, but is not likely to result in a trend toward federal listing or loss of viability for, special-status botanical species.
	Alternative 2a may affect individuals of, but is not likely to result in a trend toward federal listing or loss of viability for, special-status botanical species.
	Alternative 3 may affect individuals of, but is not likely to result in a trend toward federal listing or loss of viability for, special-status botanical species.
Swainson's Hawk, Peregrine Falcon, and Bald Eagle	Alternative 1 may affect individuals of, but is not likely to result in a trend toward federal listing or loss of viability for, the Swainson's hawk, peregrine falcon, and bald eagle.
	Alternative 2 may affect individuals of, but is not likely to result in a trend toward federal listing or loss of viability for, the Swainson's hawk, peregrine falcon, and bald eagle.
	Alternative 2a may affect individuals of, but is not likely to result in a trend toward federal listing or loss of viability for, the Swainson's hawk, peregrine falcon, and bald eagle.
	Alternative 3 may affect individuals of, but is not likely to result in a trend toward federal listing or loss of viability for, the Swainson's hawk, peregrine falcon, and bald eagle.
California Spotted Owl	Alternative 1 would have no effect on the California spotted owl.
	Alternative 2 may affect individuals of, but is not likely to result in a trend toward federal listing or loss of viability for, the California spotted owl.
	Alternative 2a may affect individuals of, but is not likely to result in a trend toward federal listing or loss of viability for, the California spotted owl.
	Alternative 3 would have no effect on the California spotted owl.
Pallid Bat, Townsend's Big-Eared Bat, and Western Red Bat	Alternative 1 may affect individuals of, but is not likely to result in a trend toward federal listing or loss of viability for pallid bat, Townsend's big-eared bat, and western red bat.
	Alternative 2 may affect individuals of, but is not likely to result in a trend toward federal listing or loss of viability for pallid bat, Townsend's big-eared bat, and western red bat.
	Alternative 2a may affect individuals of, but is not likely to result in a trend toward federal listing or loss of viability for pallid bat, Townsend's big-eared bat, and western red bat.
	Alternative 3 may affect individuals of, but is not likely to result in a trend toward federal listing or loss of viability for pallid bat, Townsend's big-eared bat, and western red bat.
White-eared Pocket Mouse and Tehachapi Pocket Mouse	Alternative 1 may affect individuals of, but is not likely to result in a trend toward federal listing or loss of viability for, the white-eared pocket mouse and Tehachapi pocket mouse.
	Alternative 2 may affect individuals of, but is not likely to result in a trend toward federal listing or loss of viability for, the white-eared pocket mouse and Tehachapi pocket mouse.
	Alternative 2a may affect individuals of, but is not likely to result in a trend toward federal listing or loss of viability for, the white-eared pocket mouse and Tehachapi pocket mouse.
	Alternative 3 would have no effect on the white-eared pocket mouse and Tehachapi pocket mouse.
Arroyo Chub	Alternative 1 may affect individuals of, but is not likely to result in a trend toward federal listing or loss of viability for, the arroyo chub.
	Alternative 2 may affect individuals of, but is not likely to result in a trend toward federal listing or loss of viability for, the arroyo chub.

SPECIES	DETERMINATION
	Alternative 2a may affect individuals of, but is not likely to result in a trend toward federal listing or loss of viability for, the arroyo chub.
	Alternative 3 may affect individuals of, but is not likely to result in a trend toward federal listing or loss of viability for, the arroyo chub.
California Legless Lizard	Alternative 1 may affect individuals of, but is not likely to result in a trend toward federal listing or loss of viability for the California legless lizard.
	Alternative 2 may affect individuals of, but is not likely to result in a trend toward federal listing or loss of viability for the California legless lizard.
	Alternative 2a may affect individuals of, but is not likely to result in a trend toward federal listing or loss of viability for the California legless lizard.
	Alternative 3 may affect individuals of, but is not likely to result in a trend toward federal listing or loss of viability for the California legless lizard.
Southwestern Pond Turtle	Alternative 1 may affect individuals of, but is not likely to result in a trend toward federal listing for, southwestern pond turtle.
	Alternative 2 may affect individuals of, but is not likely to result in a trend toward federal listing for, southwestern pond turtle.
	Alternative 2a may affect individuals of, but is not likely to result in a trend toward federal listing for, southwestern pond turtle.
	Alternative 3 may affect individuals of, but is not likely to result in a trend toward federal listing for, southwestern pond turtle.
San Bernardino Ringneck Snake, Coastal Rosy Boa, and Two-Striped Garter Snake	Alternative 1 may affect individuals of, but is not likely to result in a trend toward federal listing for, the San Bernardino Ringneck Snake, Coastal Rosy Boa, and Two-striped Garter Snake.
	Alternative 2 may affect individuals of, but is not likely to result in a trend toward federal listing for, the San Bernardino Ringneck Snake, Coastal Rosy Boa, and Two-striped Garter Snake.
	Alternative 2a may affect individuals of, but is not likely to result in a trend toward federal listing for, the San Bernardino Ringneck Snake, Coastal Rosy Boa, and Two-striped Garter Snake.
	Alternative 3 may affect individuals of, but is not likely to result in a trend toward federal listing for, the San Bernardino Ringneck Snake, Coastal Rosy Boa, and Two-striped Garter Snake.
Coast Horned Lizard	Alternative 1 may affect individuals of, but is not likely to result in a trend toward federal listing or loss of viability for, the coast horned lizard.
	Alternative 2 may affect individuals of, but is not likely to result in a trend toward federal listing or loss of viability for, the coast horned lizard.
	Alternative 2a may affect individuals of, but is not likely to result in a trend toward federal listing or loss of viability for, the coast horned lizard.
	Alternative 3 may affect individuals of, but is not likely to result in a trend toward federal listing or loss of viability for, the coast horned lizard.

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8.0 LIST OF ACRONYMS

AC	Alternating Current
ACSS/AW	Aluminum Conductor Steel Supported/Aluminum-clad Steel Wire
ACSS/TW/HS	Aluminum Conductor Steel Supported/Trapezoidal Wires/High Strength
ANF	Angeles National Forest
APLIC	Avian Power Line Interaction Committee
APM	Applicant Proposed Measure
BA	Biological Assessment
BCC	Bird of Conservation Concern
BE	Biological Evaluation
BLM	Bureau of Land Management
BLM S	Bureau of Land Management Sensitive
BMP	Best Management Practice
BR-RIN	Barren Ridge – Rinaldi
BR RTP	Barren Ridge Renewable Transmission Project
CDFG	California Department of Fish and Game
CDFG SSC	California Department of Fish and Game Species of Special Concern
CFR	Code of Federal Regulations
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EPM	Environmental Protection Measure
FC	Federal Candidate
FE	Federal Endangered
FP	Fully Protected
FR	Federal Registry
FS	Forest Service
FS MIS	Forest Service Management Indicator Species
FS S	Forest Service Sensitive
FT	Federal Threatened
FWS	Fish and Wildlife Service
GAP	Gap Analysis Program
GIS	Geographic Information System
GP	General Practice
kemil	1,000 circular mills (unit of area)
kV	kilovolt
LADWP	Los Angeles Department of Water and Power
LMP	Land Management Plan
NDDB	Natural Diversity Database
NFS	National Forest Service
NFMA	National Forest Management Act
NMFS	National Marine Fisheries Service
OHV	Off Highway Vehicle
PDCI	Pacific Direct Current Intertie
PP2	Power Plant #2
RCA	Riparian Conservation Area
ROW	Right of Way

RWQCB	Regional Water Quality Control Board
SCE	Southern California Edison
SE	State Endangered
SEA	Significant Ecological Area
SR	State Rare
ST	State Threatened
T&E	Threatened & Endangered
TEPS	Threatened, Endangered, Proposed, or Sensitive
TRTP	Tehachapi Renewable Transmission Project
TSP	Tubular Steel Pole
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
WBWG	Western Bat Working Group
WBWG H	Western Bat Working Group High Priority
WEAP	Worker Environmental Awareness Program

9.0 LIST OF PREPARERS

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APPENDIX A: WILDLIFE SPECIES OBSERVED IN PROJECT AREA (FIELD SEASON: 2008-2010)

Common Name	Scientific Name
AMPHIBIANS	
Family Bufonidae – True Toads	
Western toad	<i>Anaxyrus boreas</i>
Family Hylidae – Treefrogs and their Allies	
California treefrog	<i>Pseudacris cadaverina</i>
Pacific treefrog	<i>Pseudacris regilla</i>
BIRDS	
Family Anatidae – Ducks, Geese, Swans	
Northern shoveler	<i>Anas clypeata</i>
Mallard	<i>Anas platyrhynchos</i>
Family Odontophoridae – New World Quail	
California quail	<i>Callipepla californica</i>
Family Cathartidae – New World Vultures	
Turkey vulture	<i>Cathartes aura</i>
Family Accipitridae – Hawks, Kites, Eagles, Allies	
Cooper's hawk	<i>Accipiter cooperii</i>
Sharp-shinned hawk	<i>Accipiter striatus</i>
Red-tailed hawk	<i>Buteo jamaicensis</i>
Red-shouldered hawk	<i>Buteo lineatus</i>
Swainson's hawk	<i>Buteo swainsonii</i>
Northern harrier	<i>Circus cyaneus</i>
Osprey	<i>Pandion haliaetus</i>
Family Falconidae – Caracaras, Falcons	
Merlin	<i>Falco columbarius</i>
Peregrine falcon	<i>Falco peregrinus</i>
American kestrel	<i>Falco sparverius</i>
Family Columbidae – Pigeons, Doves	
Rock pigeon	<i>Columbia livia</i>
Mourning dove	<i>Zenaida macroura</i>
Families Tytonidae and Strigidae – Owls	
Long-eared owl	<i>Asio otus</i>
Great horned owl	<i>Bubo virginianus</i>
Northern pygmy-owl	<i>Glaucidium gnoma</i>
Western screech-owl	<i>Megascops kennicottii</i>
Family Trochilidae – Hummingbirds	
Black-chinned hummingbird	<i>Archilochus alexandri</i>
Anna's hummingbird	<i>Calypte anna</i>
Allen's hummingbird	<i>Selasphorus sasin</i>
Family Picidae – Woodpeckers, Allies	
Northern flicker	<i>Colaptes auratus</i>
Acorn woodpecker	<i>Melanerpes formicivorus</i>
Downy woodpecker	<i>Picoides pubescens</i>
Hairy woodpecker	<i>Picoides villosus</i>
Family Tyrannidae – Tyrant Flycatchers	
Pacific-slope flycatcher	<i>Empidonax difficilis</i>
Black phoebe	<i>Sayornis nigricans</i>
Say's phoebe	<i>Sayornis saya</i>
Western kingbird	<i>Tyrannus verticalis</i>
Family Laniidae – Shrikes	
Loggerhead shrike	<i>Lanius ludovicianus</i>

Common Name	Scientific Name
Family Corvidae – Crows, Jays	
Western scrub-jay	<i>Aphelocoma californica</i>
American crow	<i>Corvus brachyrhynchos</i>
Common raven	<i>Corvus corax</i>
Family Alaudidae – Larks	
Horned lark	<i>Eremophila alpestris</i>
Family Hirundinidae – Swallows	
Northern rough-winged swallow	<i>Stelgidopteryx serripennis</i>
Family Timaliidae – Babblers	
Wrentit	<i>Chamaea fasciata</i>
Family Paridae – Chickadees, Titmice	
Oak titmouse	<i>Baeolophus inornatus</i>
Family Aegithalidae – Long-tailed Tits, Bushtits	
Bushtit	<i>Psaltirparus minimus</i>
Family Sittidae – Nuthatches	
Red-breasted nuthatch	<i>Sitta canadensis</i>
Family Troglodytidae – Wrens	
Canyon wren	<i>Catherpes mexicanus</i>
Bewick's wren	<i>Thryomanes bewickii</i>
House wren	<i>Troglodytes aedon</i>
Family Regulidae – Kinglets	
Ruby-crowned kinglet	<i>Regulus calendula</i>
Family Sylviidae – Old World Warblers, Gnatcatchers	
Blue-gray gnatcatcher	<i>Poliopitila caerulea</i>
California gnatcatcher	<i>Poliopitila californica</i>
Family Turdidae – Thrushes	
American robin	<i>Turdus migratorius</i>
Family Mimidae – Mockingbirds, Thrashers	
Northern mockingbird	<i>Mimus polyglottos</i>
Le Conte's thrasher	<i>Toxostoma crissale</i>
California thrasher	<i>Toxostoma redivivum</i>
Family Sturnidae – Starlings	
European starling	<i>Sturnus vulgaris</i>
Family Motacillidae – Wagtails, Pipits	
American pipit	<i>Anthus rubescens</i>
Family Bombycillidae – Waxwings	
Cedar waxwing	<i>Bombycilla cedrorum</i>
Family Ptilonotidae – Silky-flycatchers	
Phainopepla	<i>Phainopepla nitens</i>
Family Parulidae – Wood-warblers	
Yellow-rumped warbler	<i>Dendroica coronata</i>
Common yellowthroat	<i>Geothlypis trichas</i>
Yellow-breasted chat	<i>Icteria virens</i>
Orange-crowned warbler	<i>Vermivora celata</i>
Family Emberizidae – Emberizids	
Sage sparrow	<i>Amphispiza belli</i>
Dark-eyed junco	<i>Junco hyemalis</i>
Song sparrow	<i>Melospiza melodia</i>
California towhee	<i>Pipilo crissalis</i>
Spotted towhee	<i>Pipilo maculatus</i>
White-crowned sparrow	<i>Zonotrichia leucophrys</i>
Family Cardinalidae – Cardinals, Saltators, Allies	
Black-headed grosbeak	<i>Pheucticus melanocephalus</i>
Family Icteridae – Blackbirds	

Common Name	Scientific Name
Brewer's blackbird	<i>Euphagus cyanocephalus</i>
Brown-headed cowbird	<i>Molothrus ater</i>
Western meadowlark	<i>Sturnella neglecta</i>
Family Fringillidae – Fringilline and Cardueline Finches, Allies	
Lesser goldfinch	<i>Carduelis psaltria</i>
House finch	<i>Carpodacus mexicanus</i>
Family Passeridae – Old World Sparrows	
House sparrow	<i>Passer domesticus</i>
FISH	
Family Cyprinidae – Carps and Minnows	
Arroyo chub	<i>Gila orcuttii</i>
Family Ictaluridae – North American Freshwater Catfishes	
Black bullhead	<i>Ameiurus melas</i>
Family Poeciliidae – Livebearers	
Mosquitofish	<i>Gambusia affinis</i>
MAMMALS	
Family Canidae – Wolves and Foxes	
Coyote	<i>Canis latrans</i>
Common gray fox	<i>Urocyon cinereoargenteus</i>
Family Cervidae – Deer	
Mule deer	<i>Odocoileus hemionus</i>
Family Felidae – Cats	
Bobcat	<i>Lynx rufus</i>
Family Heteromyidae – Pocket Mice and Kangaroo Rats	
Kangaroo rat	<i>Dipodomys sp.</i>
Family Leporidae – Rabbits and Hares	
Black-tailed jackrabbit	<i>Lepus californicus</i>
Family Vespertilionidae – Vesper Bats	
Big brown bat	<i>Eptesicus fuscus</i>
California myotis	<i>Myotis californicus</i>
REPTILES	
Family Boidae – Boas	
Coastal rosy boa	<i>Lichanura trivirgata roseofusca</i>
Family Colubridae – Colubrids	
California striped racer	<i>Masticophis lateralis lateralis</i>
Two-striped garter snake	<i>Thamnophis hammondi</i>
Family Phrynosomatidae – North American Spiny Lizards and Their Allies	
Coast horned lizard	<i>Phrynosoma coronatum</i>
Western fence lizard	<i>Sceloporus occidentalis</i>
Common side-blotched lizard	<i>Uta stansburiana</i>
Family Teiidae – Whiptails and Their Allies	
Tiger Whiptail	<i>Aspidoscelis tigris</i>
Family Viperidae – Vipers	
Southern Pacific rattlesnake	<i>Crotalus oreganus helleri</i>

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Plant Species Observed in Project Area (Field Season: 2008-2010)

Scientific Name ¹	Common Name ²	Project Component					New 230 kV Circuit
		Alternative 1	Alternative 2	Alternative 2a	Alternative 3	Reconductoring	
FERNS AND FERN ALLIES							
PTERIDACEAE	MAIDENHAIR FERN FAMILY						
<i>Pellaea andromedifolia</i>	coffee cliffbrake		X	X		X	
<i>Pellaea mucronata</i>	birdfoot cliffbrake		X	X	X	X	
<i>Pentagramma triangularis</i>	goldback fern		X			X	
SELAGINELLACEAE	SPIKE-MOSS FAMILY						
<i>Selaginella bigelovii</i>	bushy spikemoss	X	X	X		X	
GYMNOSPERMS							
CUPRESSACEAE	CYPRESS FAMILY						
<i>Juniperus californica</i>	California juniper	X					
EPHEDRACEAE	MORMON-TEA FAMILY						
<i>Ephedra</i> sp.	jointfir				X		
PINACEAE	PINE FAMILY						
<i>Pinus monophylla</i>	singleleaf pinyon	X					
<i>Pinus sabiniana</i>	California foothill pine	X					
<i>Pseudotsuga macrocarpa</i>	bigcone Douglas-fir			X			
FLOWERING PLANTS – DICOTS							
ACERACEAE	MAPLE FAMILY						
<i>Acer macrophyllum</i>	bigleaf maple			X			
ANACARDIACEAE	SUMAC FAMILY						
<i>Malosma laurina</i>	laurel sumac	X					
<i>Rhus ovata</i>	sugar sumac	X	X		X	X	X
<i>Rhus trilobata</i>	skunkbush sumac	X	X	X	X	X	X
<i>Toxicodendron diversilobum</i>	poison oak	X	X	X	X	X	X
APIACEAE	CARROT FAMILY						

Scientific Name ¹	Common Name ²	Project Component					New 230 kV Circuit
		Alternative 1	Alternative 2	Alternative 2a	Alternative 3	Reconductoring	
<i>Anthriscus caucalis</i> *	bur chervil		X			X	
<i>Apiastrum angustifolium</i>	mock parsley		X	X		X	
<i>Bowlesia incana</i>	hoary bowlesia		X			X	
<i>Daucus pusillus</i>	American wild carrot		X			X	
<i>Lomatium dasycarpum</i>	woolyfruit desertparsley		X			X	
<i>Lomatium mohavense</i> ssp. <i>mohavense</i>	Mojave desertparsley		X			X	
<i>Sanicula arguta</i>	sharptooth blacksnakeroot		X			X	
<i>Sanicula crassicaulis</i>	Pacific blacksnakeroot		X	X		X	
<i>Sanicula tuberosa</i>	turkey pea		X			X	
<i>Tauschia arguta</i>	southern umbrellawort			X			
<i>Tauschia</i> sp.	umbrellawort	X					
ASCLEPIADACEAE	MILKWEED FAMILY						
<i>Asclepias eriocarpa</i>	woollypod milkweed	X					
<i>Asclepias fascicularis</i>	narrow-leaved milkweed		X			X	
ASTERACEAE	ASTER FAMILY						
<i>Achyrrachaena mollis</i>	blow-wives		X			X	
<i>Acourtia microcephala</i>	sacapellote		X	X		X	
<i>Agoseris grandiflora</i>	large-flowered agoseris		X			X	
<i>Agoseris retrorsa</i>	spear-leaved agoseris		X	X	X	X	X
<i>Agoseris</i> sp.	agoseris			X			
<i>Ambrosia acanthicarpa</i>	flatspine bur ragweed		X			X	
<i>Ambrosia dumosa</i>	burrobush			X			
<i>Ambrosia psilostachya</i>	western ragweed		X			X	
<i>Ambrosia</i> sp.	ragweed	X					
<i>Artemisia californica</i>	coastal sagebrush	X	X	X	X	X	X
<i>Artemisia douglasiana</i>	mugwort		X	X		X	
<i>Artemisia dranunculul</i>	tarragon	X		X			
<i>Artemisia tridentata</i>	big sagebrush	X		X			
<i>Baccharis douglasii</i>	Douglas' baccharis		X	X		X	
<i>Baccharis pilularis</i>	coyotebrush		X			X	
<i>Baccharis salicifolia</i>	mulefat	X	X	X		X	
<i>Brickellia californica</i>	California brickellbush		X	X		X	
<i>Brickellia nevadensis</i>	Nevin's brickellbush	X		X		X	
<i>Carduus pycnocephalus</i> *	Italian plumeless thistle		X			X	X

Scientific Name ¹	Common Name ²	Project Component				
		Alternative 1	Alternative 2	Alternative 2a	Alternative 3	New 230 kV Circuit
<i>Centaurea melitensis</i> *	Maltese star-thistle	X	X	X		X
<i>Centaurea solstitialis</i> *	yellow star-thistle	X				
<i>Chaenactis fremontii</i>	Fremont pincushion	X	X			X
<i>Chaenactis glabriuscula</i>	yellow pincushion	X	X		X	X
<i>Chamomilla suaveolens</i> *	pineapple weed		X	X		X
<i>Chrysothamnus nauseosus</i>	rubber rabbitbrush	X		X		
<i>Cirsium occidentale</i>	cobwebby thistle	X	X	X	X	X
<i>Cnicus benedictus</i> *	blessed thistle	X	X			X
<i>Coreopsis bigelovii</i>	Bigelow's tickseed		X			
<i>Coreopsis</i> sp.	tickseed	X				X
<i>Corethrogyne filaginifolia</i>	California aster	X	X	X		X
<i>Deinandra</i> (=Hemizonia) <i>fasciculata</i>	fascicled tarweed		X	X		X
<i>Encelia actonii</i>	sunflower			X		X
<i>Encelia californica</i>	California brittlebush	X				X
<i>Ericameria linearifolia</i>	narrowleaf goldenbush	X	X	X		X
<i>Ericameria pinifolia</i>	pinebush	X	X			X
<i>Erigeron foliosus</i>	leafy fleabane	X	X			X
<i>Eriophyllum confertiflorum</i>	golden yarrow	X	X	X	X	X
<i>Filago californica</i>	California cottonrose	X	X	X		X
<i>Filago gallica</i> *	narrowleaf cottonrose	X	X			X
<i>Gazania linearis</i> *	treasureflower		X			
<i>Gnaphalium californicum</i>	California cudweed		X	X		X
<i>Gnaphalium canescens</i>	Wright's cudweed		X	X		
<i>Gnaphalium stramineum</i>	cotton-batting plant		X	X		X
<i>Gnaphalium</i> sp.	cudweed	X	X			X
<i>Gutierrezia californica</i>	San Joaquin snakeweed	X	X	X		X
<i>Gutierrezia sarothrae</i>	broom snakeweed					X
<i>Hazardia squarrosa</i>	Sawtooth goldenbush		X	X	X	
<i>Helianthus annuus</i>	common sunflower	X				
<i>Helianthus gracilentus</i>	slender sunflower	X	X	X	X	X
<i>Hemizonia fasciculata</i>	clustered tarweed		X			
<i>Hemizonia</i> sp.	Tarweed		X			
<i>Heterotheca grandiflora</i>	telegraph weed		X			X
<i>Heterotheca sessiliflora</i>	silver telegraph weed		X			
<i>Isocoma menziesii</i>	Menzies' goldenbush		X	X		X
<i>Lactuca serriola</i> *	prickly lettuce		X			X

Scientific Name ¹	Common Name ²	Project Component				
		Alternative 1	Alternative 2	Alternative 2a	Alternative 3	New 230 kV Circuit
<i>Lagophylla ramosissima</i>	common hareleaf		X	X		X
<i>Lasthenia californica</i>	California goldfields		X	X		X
<i>Layia glandulosa</i>	whitedaisy tidytips	X		X		
<i>Lepidospartum squamatum</i>	California broomsage	X	X	X		X
<i>Lessingia glandulifera</i>	valley lessingia		X			
<i>Lessingia flaginifolia</i> var. <i>flaginifolia</i>	common sandaster	X	X			X
<i>Lessingia</i> sp.	lessingia	X				
<i>Madia exigua</i>	threadsteam madia		X			X
<i>Malacothrix cleavelandii</i>	Cleveland's desertdandelion		X			X
<i>Malacothrix saxatilis</i>	cliff desertdandelion	X	X	X		X
<i>Micropus californicus</i>	slender cottonwood		X			X
<i>Osmadenia tenella</i>	false rosinweed		X			X
<i>Rafinesquia californica</i>	California plumeseed	X	X	X	X	X
<i>Senecio flaccidus</i>	threadleaf ragwort		X	X		X
<i>Senecio vulgaris</i> *	common groundsel	X				X
<i>Silybum marianum</i> *	blessed milkthistle		X			
<i>Solidago californica</i>	California goldenrod	X	X	X		X
<i>Sonchus oleraceus</i> *	common sowthistle		X			
<i>Stebbinsoseris heterocarpa</i>	Grassland silverpuffs	X	X			X
<i>Stephanomeria exigua</i>	small wirelettuce	X	X	X		
<i>Stephanomeria pauciflora</i>	brownplume wirelettuce	X	X	X		
<i>Stephanomeria virgata</i>	rod wirelettuce	X	X			X
<i>Stephanomeria</i> sp.	wirelettuce		X			
<i>Uropappus lindleyi</i>	Lindley's silverpuffs	X	X	X		X
BETULACEAE	BIRCH FAMILY					
<i>Alnus rhombifolia</i>	white alder			X		
BORAGINACEAE	BORAGE FAMILY					
<i>Amsinckia menziesii</i>	Menzies' fiddleneck	X	X	X	X	X
<i>Cryptantha decipiens</i>	gravelbar cryptantha		X	X		
<i>Cryptantha intermedia</i>	common cryptantha	X	X		X	X
<i>Cryptantha micrantha</i>	redroot cryptantha					X
<i>Cryptantha microstachys</i>	Tejon cryptantha		X	X		X
<i>Cryptantha muricata</i>	pointed cryptantha	X	X	X	X	X
<i>Cryptantha</i> sp.	cryptantha	X	X	X	X	X

Scientific Name ¹	Common Name ²	Project Component					New 230 kV Circuit
		Alternative 1	Alternative 2	Alternative 2a	Alternative 3	Reconductoring	
<i>Heliotropium curassavicum</i>	Chinese parsley		X	X		X	
<i>Pectocarya linearis</i>	sagebrush combseed		X	X		X	X
<i>Pectocarya penicillata</i>	sleeping combseed		X			X	
<i>Pectocarya setosa</i>	moth combseed	X	X			X	X
<i>Plagiobothrys arizonicus</i>	Arizona popcornflower		X			X	X
<i>Plagiobothrys canescens</i>	valley popcornflower		X			X	
<i>Plagiobothrys</i> sp.	popcorn flower		X			X	
BRASSICACEAE							
<i>Brassica nigra</i> *	MUSTARD FAMILY black mustard		X			X	
<i>Caulanthus amplexicaulis</i> var. <i>amplexicaulis</i>	claspingleaf wild cabbage	X					
<i>Caulanthus coulteri</i>	Coulter's wild cabbage	X					
<i>Caulanthus</i> sp.	wild cabbage		X			X	
<i>Descurainia pinnata</i>	western tansymustard						
<i>Erysimum capitatum</i>	western wallflower	X		X			X
<i>Guillemia lasiophylla</i>	California mustard	X	X			X	X
<i>Hirschfeldia incana</i> *	shortpod mustard	X	X	X		X	X
<i>Lepidium fremontii</i> *	desert pepperweed	X	X	X		X	
<i>Lepidium latifolium</i> *	perennial pepperweed	X					X
<i>Lepidium</i> sp.*	pepperweed	X	X	X		X	X
<i>Rorippa nasturtium-aquaticum</i>	white water-ress		X			X	
<i>Sisymbrium altissimum</i> *	tumble mustard	X	X			X	X
<i>Sisymbrium irio</i> *	London rocket		X			X	
<i>Sisymbrium orientale</i>	Indian hedgemustard		X	X		X	X
<i>Streptanthus</i> sp.	jewel flower		X			X	
<i>Thysanocarpus curvipes</i>	sand fringedpod		X			X	
<i>Thysanocarpus</i> sp.	fringedpod		X			X	
CACTACEAE							
<i>Opuntia basilaris</i> var. <i>basilaris</i>	CACTUS FAMILY Beavertail pricklypear	X	X	X		X	X
<i>Opuntia basilaris</i> var. <i>brachyclada</i> +	short-joint beavertail	X	X		X	X	
CAMPANULACEAE							
<i>Nemacladus</i> sp.	BELLFLOWER FAMILY threadplant		X			X	
CAPPARACEAE							
	CAPER FAMILY						

Scientific Name ¹	Common Name ²	Project Component				
		Alternative 1	Alternative 2	Alternative 2a	Alternative 3	New 230 kV Circuit
<i>Isomeris arborea</i>	bladderpod	X				
CAPRIFOLIACEAE	HONEYSUCKLE FAMILY					
<i>Lonicera hispidula</i>	pink honeysuckle	X				
<i>Lonicera subspicata</i>	southern honeysuckle	X	X			X
<i>Sambucus mexicana</i>	Mexican elderberry	X	X	X	X	X
<i>Symphoricarpos mollis</i>	spreading snowberry		X			
CARYOPHYLLACEAE	PINK FAMILY					
<i>Cerastium glomeratum</i> *	sticky chickweed		X	X		X
<i>Herniaria hirsuta</i> ssp. <i>cinerea</i> *	hairy rupturewort		X			X
<i>Minuartia californica</i>	California sandwort		X			X
<i>Silene californica</i>	California campion		X			X
<i>Silene laciniata</i>	cardinal catchfly		X			X
<i>Stellaria media</i> *	common chickweed		X			X
<i>Spergula arvensis</i> ssp. <i>arvensis</i> *	corn spurry		X			X
CHENOPODIACEAE	GOOSEFOOT FAMILY					
<i>Atriplex canescens</i>	fourwing saltbush	X	X			
<i>Atriplex confertifolia</i>	shadscale saltbush					X
<i>Chenopodium californicum</i>	California goosefoot		X	X		X
<i>Salsola tragus</i> *	prickly Russian thistle	X	X			X
<i>Salsola</i> sp. *	Russian thistle		X			X
CISTACEAE	ROCK-ROSE FAMILY					
<i>Cistus</i> sp. *	rockrose		X			X
<i>Helianthemum scoparium</i>	Bisbee Peak rushrose		X	X		X
CONVOLVULACEAE	MORNING GLORY FAMILY					
<i>Calystegia macrostegia</i>	morning glory	X	X			X
<i>Calystegia peirsonii</i> +	Peirson's morning glory		X		X	X
CRASSULACEAE	STONECROP FAMILY					
<i>Crassula connata</i>	sand pygmy		X			
<i>Dudleya lanceolata</i>	Lanceleaf liveforever	X	X	X	X	X
<i>Dudleya pulverulenta</i>	chalk dudleya		X			X

Scientific Name ¹	Common Name ²	Project Component					New 230 kV Circuit
		Alternative 1	Alternative 2	Alternative 2a	Alternative 3	Reconductoring	
CUCURBITACEAE	GOURD FAMILY						
<i>Marah macrocarpus</i>	Cucamonga manroot	X	X	X	X	X	X
CUSCUTACEAE	DODDER FAMILY						
<i>Cuscuta californica</i>	chaparral dodder	X	X	X	X	X	X
<i>Cuscuta sp.</i>	dodder		X			X	
DATISCAACEAE	DATISCA FAMILY						
<i>Datisca glomerata</i>	durango root		X	X		X	
ERICACEAE	HEATH FAMILY						
<i>Arctostaphylos glandulosa</i>	Eastwood's manzanita		X	X		X	
<i>Arctostaphylos glauca</i>	bigberry manzanita	X	X	X		X	X
EUPHORBIACEAE	SPURGE FAMILY						
<i>Chamaesyce sp.</i>	sandmat		X			X	X
<i>Croton californicus</i>	California croton		X			X	
<i>Eremocarpus setigerus</i>	turkey mullein	X	X			X	X
FABACEAE	PEA FAMILY						
<i>Astragalus didymocarpus</i>	dwarf white milkvetch		X			X	
<i>Astragalus sp.</i>	milkvetch		X			X	X
<i>Lathyrus vestitus ssp. vestitus</i>	Pacific pea		X	X		X	
<i>Lotus oblongifolius</i>	wet foot trefoil			X			
<i>Lotus purshianus</i>	lotus		X	X		X	
<i>Lotus scoparius</i>	common deerweed	X	X	X		X	X
<i>Lotus strigosus</i>	strigose bird's-foot trefoil		X	X	X	X	X
<i>Lupinus benthamii</i>	Bentham lupine		X	X		X	X
<i>Lupinus bicolor</i>	miniature lupine		X			X	
<i>Lupinus concinnus</i>	bajada lupine	X	X	X	X	X	X
<i>Lupinus excubitus</i>	grape soda lupine		X	X		X	
<i>Lupinus hirsutissimus</i>	stinging lupine	X	X	X		X	X
<i>Lupinus microcarpus var. microcarpus</i>	valley lupine		X			X	
<i>Lupinus nanus</i>	sky lupine		X		X	X	X
<i>Lupinus sparsiflorus</i>	sparse-flowered lupine		X	X		X	

Scientific Name ¹	Common Name ²	Project Component				
		Alternative 1	Alternative 2	Alternative 2a	Alternative 3	Reconductoring
<i>Lupinus succulentus</i>	arroyo lupine		X			X
<i>Lupinus truncatus</i>	collared annual lupine		X			X
<i>Lupinus sp.</i>	lupine	X				
<i>Medicago polymorpha</i> *	burclover		X			X
<i>Melilotus albus</i>	white sweetclover		X			X
<i>Melilotus indicus</i> *	yellow sweetclover	X	X			X
<i>Melilotus officinalis</i> *	yellow sweet-clover		X	X		X
<i>Spartium junceum</i> *	Spanish broom		X			X
<i>Trifolium albobpurpureum</i>	rancheria clover		X			X
<i>Trifolium hirtum</i> *	rose clover		X	X	X	X
<i>Trifolium wilddenovii</i>	tomcat clover		X	X		X
FAGACEAE	OAK FAMILY					
<i>Quercus agrifolia</i>	California live oak		X	X		X
<i>Quercus berberidifolia</i>	scrub oak	X	X	X		X
<i>Quercus chrysolepis</i>	canyon live oak	X	X	X		X
<i>Quercus dumosa</i>	California scrub oak				X	
<i>Quercus garryana</i>	Oregon white oak			X		
<i>Quercus john-tuckeri</i>	Tucker oak	X	X	X		X
<i>Quercus wislizenii</i> var. <i>frutescens</i>	interior live oak			X		
GARRYACEAE	SILK TASSEL FAMILY					
<i>Garrya flavescens</i>	ashy silk tassel	X		X		
GERANIACEAE	GERANIUM FAMILY					
<i>Erodium cicutarium</i> *	redstem stork's bill	X	X	X	X	X
<i>Erodium cicutarium</i> ssp. <i>cuticularium</i>	redstem stork's bill		X			X
GROSSULARIACEAE	GOOSEBERRY FAMILY					
<i>Ribes aureum</i>	golden currant		X			X
<i>Ribes malvaceum</i>	chaparral currant			X		
<i>Ribes menziesii</i>	canyon gooseberry			X		
HYDROPHYLLACEAE	WATERLEAF FAMILY					
<i>Emmenanthe penduliflora</i>	whispering bells	X	X	X	X	X
<i>Eriodictyon crassifolium</i>	thickleaf yerba santa	X	X	X	X	X

Scientific Name ¹	Common Name ²	Project Component					New 230 kV Circuit
		Alternative 1	Alternative 2	Alternative 2a	Alternative 3	Reconductoring	
<i>Eucrypta chrysanthemifolia</i>	spotted hideseed		X	X		X	X
<i>Nemophila parviflora</i> var. <i>parviflora</i>	small flower nemophila			X			
<i>Nemophila</i> sp.	nemophila		X	X		X	
<i>Phacelia brachyloba</i>	short-lobed phacelia		X	X		X	
<i>Phacelia campanularia</i>	desert bluebells				X		
<i>Phacelia cicutaria</i>	caterpillar phacelia	X	X	X	X	X	X
<i>Phacelia distans</i>	common phacelia		X	X		X	
<i>Phacelia imbricata</i>	imbricate phacelia		X			X	
<i>Phacelia minor</i>	wild canterbury bluebells		X		X	X	X
<i>Phacelia parryi</i>	Parry's phacelia		X			X	
<i>Phacelia ramosissima</i>	branching phacelia		X	X		X	
<i>Phacelia</i> sp.	phacelia	X	X			X	X
<i>Pholistoma auritum</i> var. <i>auritum</i>	blue fiesta flower		X			X	
LAMIACEAE	MINT FAMILY						
<i>Marrubium vulgare</i> *	common horehound	X	X			X	X
<i>Salvia apiana</i>	white sage	X	X	X	X	X	X
<i>Salvia columbariae</i>	chia	X	X	X	X	X	X
<i>Salvia leucophylla</i>	purple sage		X	X		X	X
<i>Salvia mellifera</i>	black sage	X	X	X	X	X	X
<i>Salvia pachyphylla</i>	blue sage		X			X	
<i>Scutellaria tuberosa</i>	Danny's skullcap		X	X		X	
<i>Stachys albens</i>	white hedge-nettle		X	X		X	
<i>Stachys</i> sp.	hedge nettle			X			
<i>Trichostema lanatum</i>	woolly bluecurls		X	X	X	X	X
<i>Trichostema lanceolatum</i>	vinegar weed		X			X	
<i>Trichostema parishii</i>	Parish's bluecurls		X	X		X	
LOASACEAE	LOASA FAMILY						
<i>Mentzelia albicaulis</i>	blazing star	X	X	X	X	X	X
<i>Mentzelia micrantha</i>	San Luis blazing star	X	X			X	X
<i>Mentzelia</i> sp.	blazing star	X					
MALVACEAE	MALLOW FAMILY						
<i>Malacothamnus fasciculatus</i>	bushmallow		X	X		X	

Scientific Name ¹	Common Name ²	Project Component				
		Alternative 1	Alternative 2	Alternative 2a	Alternative 3	New 230 kV Circuit
NYCTAGINACEAE	FOUR O'CLOCK FAMILY					
<i>Mirabilis californica</i>	California four o'clock		X	X	X	X
OLEACEAE	OLIVE FAMILY					
<i>Fraxinus dipetala</i>	California ash		X	X		X
<i>Fraxinus velutina</i>	velvet ash	X	X			X
ONAGRACEAE	EVENING PRIMROSE FAMILY					
<i>Camissonia bistorta</i>	southern sun cup		X			X
<i>Camissonia californica</i>	California sun cup	X	X	X		X
<i>Camissonia hirtella</i>	hairy sun cup		X			
<i>Camissonia ignota</i>	suncup			X		
<i>Camissonia palmeri</i>	Palmer evening primrose			X		
<i>Camissonia strigulosa</i>	strigulose sun cup		X			X
<i>Camissonia sp.</i>	suncup	X	X	X		X
<i>Clarkia epilobioides</i>	canyon clarkia		X			
<i>Clarkia purpurea</i> ssp. <i>quadrivulnera</i>	winecup clarkia		X	X		
<i>Clarkia speciosa</i> ssp. <i>speciosa</i>	redspot clarkia		X			
<i>Clarkia unguiculata</i>	elegant clarkia		X			
<i>Epilobium brachycarpum</i>	panicked willow-herb		X			
<i>Epilobium canum</i>	hummingbird trumpet	X	X	X		
<i>Epilobium sp.</i>	willow-herb	X		X		X
<i>Oenothera elata</i> ssp. <i>hookeri</i>	Hooker's evening primrose			X		
<i>Oenothera sp.</i>	evening primrose	X				
OROBANCHACEAE	BROOMRAPE FAMILY					
<i>Orobancha bulbosa</i>	chaparral broomrape	X		X		X
<i>Orobancha fasciculata</i>	clustered broomrape	X		X		X
PAPAVERACEAE	POPPY FAMILY					
<i>Argemone munita</i>	prickly poppy		X	X		X
<i>Dendromecon rigida</i>	tree poppy		X	X		X
<i>Dicentra chrysantha</i>	golden ear-drops		X	X		X
<i>Eschscholzia californica</i>	California poppy	X	X	X	X	X
<i>Papaver californicum</i>	fire poppy		X			X

Scientific Name ¹	Common Name ²	Project Component					New 230 kV Circuit
		Alternative 1	Alternative 2	Alternative 2a	Alternative 3	Reconductoring	
PLANTAGINACEAE	PLANTAIN FAMILY						
<i>Plantago erecta</i>	California plantain		X			X	X
PLATANACEAE	PLANE TREE FAMILY						
<i>Platanus racemosa</i>	California sycamore		X	X		X	
POLEMONIACEAE	PHLOX FAMILY						
<i>Allophylum divaricatum</i>	purple false gillyflower		X	X		X	
<i>Allophylum gilioides</i>	dense false gillyflower		X			X	
<i>Eriastrum densifolium</i>	giant woollystar	X	X	X		X	X
<i>Eriastrum sapphirinum</i>	sapphire woollystar	X	X			X	
<i>Gilia brecciarum</i>	Nevada gilia		X				
<i>Gilia capitata</i>	bluehead gilia	X	X	X	X	X	X
<i>Gilia clivorum</i>	many-stemmed gilia		X			X	
<i>Gilia sp.</i>	gilia	X	X	X	X	X	
<i>Leptodactylon californicum</i>	prickly phlox			X			
<i>Leptodactylon pungens</i>	granite gilia		X			X	
<i>Linanthus dichotomus</i>	evening snow		X		X	X	
<i>Linanthus dianthiflorus</i>	fringed linanthus		X	X		X	
<i>Linanthus parviflorus</i>	false baby stars		X			X	
<i>Linanthus sp.</i>	linanthus	X	X	X		X	X
<i>Navarretia hamata</i>	southern hooked navarretia		X			X	
POLYGONACEAE	BUCKWHEAT FAMILY						
<i>Chorizanthe staticoides</i>	Turkish rugging	X	X	X	X	X	X
<i>Chorizanthe xanti</i>	Riverside spineflower	X					
<i>Chorizanthe sp.</i>	spineflower			X			
<i>Eriogonum deflexum</i>	flat crown buckwheat	X					
<i>Eriogonum elongatum</i>	long stem buckwheat	X	X	X		X	
<i>Eriogonum fasciculatum</i>	California buckwheat	X	X	X		X	X
<i>Eriogonum fasciculatum</i> var. <i>foliolosum</i>	California buckwheat		X			X	
<i>Eriogonum fasciculatum</i> ssp. <i>polifolium</i>	California buckwheat	X	X	X	X	X	X
<i>Eriogonum sp.</i>	annual buckwheat	X		X			X
<i>Pterostegia drymariaoides</i>	woodland pterostegia		X	X		X	

Scientific Name	Common Name?	Project Component				
		Alternative 1	Alternative 2	Alternative 2a	Alternative 3	New 230 kV Circuit
PORTULACACEAE						
<i>Calandrinia ciliata</i>	red maids		X			
<i>Calyptridium monandrum</i>	pussy paws		X	X		
<i>Calyptridium</i> sp.	pussy paws	X	X			X
<i>Claytonia perfoliata</i>	miner's lettuce	X	X	X		X
<i>Dodecatheon clevelandii</i>	padre's shooting star		X			
RANUNCULACEAE						
<i>Clematis</i> sp.	BUTTERCUP FAMILY virgin's bower		X	X	X	
<i>Delphinium parryi</i>	San Bernardino larkspur	X	X	X		X
<i>Delphinium</i> sp.	larkspur	X	X	X		
<i>Ranunculus californicus</i>	California buttercup			X		
<i>Ranunculus hebecarpus</i>	delicate buttercup		X			X
<i>Thalictrum fendleri</i> var. <i>polycarpum</i>	common meadow-rue		X			X
RHAMNACEAE						
<i>Ceanothus crassifolius</i>	BUCKTHORN FAMILY hoaryleaf ceanothus		X			
<i>Ceanothus cuneatus</i>	buckbrush	X	X	X		X
<i>Ceanothus greggii</i>	desert ceanothus	X			X	X
<i>Ceanothus leucodermis</i>	chaparral white thorn		X	X		
<i>Rhamnus californica</i>	coffee berry			X		
<i>Rhamnus ilicifolia</i>	redberry	X	X		X	X
<i>Rhamnus tomentella</i>	hoary coffeeberry			X	X	
ROSACEAE						
<i>Adenostoma fasciculatum</i>	ROSE FAMILY chamise		X	X	X	X
<i>Cercocarpus betuloides</i>	mountain mahogany	X	X	X		
<i>Heteromeles arbutifolia</i>	toyon	X	X	X	X	X
<i>Potentilla glandulosa</i>	Cinquefoil		X			X
<i>Prunus ilicifolia</i>	hollyleaf cherry	X	X	X	X	X
<i>Rosa californica</i>	California wild rose		X	X		X
<i>Rosa</i> sp.	rose			X		
<i>Rubus ursinus</i>	California blackberry		X			X
RUBIACEAE						
<i>Galium andrewsii</i>	MADDER FAMILY Andrews' bedstraw	X	X	X		X

Scientific Name ¹	Common Name ²	Project Component				
		Alternative 1	Alternative 2	Alternative 2a	Alternative 3	New 230 kV Circuit
<i>Galium angustifolium</i>	narrow-leaf bedstraw	X	X	X		X
<i>Galium aparine</i>	sticky willy		X	X		X
<i>Galium hallii</i>	nodding bedstraw			X		
SALICACEAE	WILLOW FAMILY					
<i>Populus fremontii</i>	Fremont cottonwood	X	X	X		X
<i>Salix exigua</i>	narrow leaf willow		X	X		X
<i>Salix laevigata</i>	red willow	X	X	X		X
<i>Salix lasiolepis</i>	arroyo willow	X	X	X		X
<i>Salix</i> sp.	Willow		X			X
SIMARUBACEAE	QUASSIA FAMILY					
<i>Ailanthus altissima</i>	tree of heaven		X			X
SCROPHULARIACEAE	FIGWORT FAMILY					
<i>Antirrhinum coulterianum</i>	white snapdragon		X			X
<i>Antirrhinum kelloggii</i>	Kellogg's snapdragon		X			X
<i>Antirrhinum multiflorum</i>	chaparral snapdragon		X			X
<i>Castilleja applegatei</i>	Indian paintbrush			X		
<i>Castilleja exserta</i>	Exserted Indian paintbrush	X	X			X
<i>Castilleja foliolosa</i>	Texas Indian paintbrush	X	X	X		X
<i>Castilleja minor</i> ssp. <i>spiralis</i>	annual Indian paintbrush	X		X	X	X
<i>Collinsia heterophylla</i>	purple Chinese houses		X	X		
<i>Cordylanthus rigidus</i>	bird's beak	X	X	X		X
<i>Keckiella breviflora</i>	bush beardtongue	X				
<i>Keckiella cordifolia</i>	heart-leaved penstemon		X	X		X
<i>Keckiella ternata</i>	scarlet keckiella	X	X	X		X
<i>Mimulus aurantiacus</i>	sticky monkeyflower		X	X		X
<i>Mimulus brevipes</i>	wide-throated monkeyflower		X			X
<i>Mimulus cardinalis</i>	scarlet monkeyflower		X	X		X
<i>Mimulus guttatus</i>	seep monkeyflower	X	X	X		X
<i>Mimulus pilosus</i>	downy monkeyflower	X	X			X
<i>Penstemon centranthifolius</i>	scarlet bugler	X	X	X		X
<i>Penstemon grinnellii</i>	Grinnell's beardtongue	X		X		X
<i>Penstemon heterophyllus</i>	chaparral penstemon			X		X

Scientific Name ¹	Common Name ²	Project Component					New 230 kV Circuit
		Alternative 1	Alternative 2	Alternative 2a	Alternative 3	Reconductoring	
<i>Penstemon spectabilis</i>	showy penstemon	X	X	X	X	X	X
<i>Veronica americana</i>	American brooklime		X			X	
<i>Veronica anagallis-aquatica</i> *	water speedwell		X			X	
SOLANACEAE	NIGHTSHADE FAMILY						
<i>Datura wrightii</i>	sacred thorn-apple	X	X			X	
<i>Nicotiana glauca</i> *	tree tobacco		X		X	X	X
<i>Solanum xanti</i>	chaparral nightshade		X	X		X	X
TAMARICACEAE	TAMARISK FAMILY						
<i>Tamarix ramosissima</i> *	tamarisk		X			X	
<i>Tamarix</i> sp.	tamarisk	X					
URTICACEAE	NETTLE FAMILY						
<i>Urtica dioica</i> ssp. <i>holosericea</i>	hoary nettle		X			X	
<i>Urtica urens</i> *	dwarf nettle		X			X	
VERBENACEAE	VERVAIN FAMILY						
<i>Verbena lasiostachys</i>	verbena			X			
VIOLACEAE	VIOLET FAMILY						
<i>Viola purpurea</i>	violet			X			
VISCACEAE	MISTLETOE FAMILY						
<i>Phoradendron</i> sp.	mistletoe	X					
FLOWERING PLANTS – MONOCOTS							
CYPERACEAE	SEDGE FAMILY						
<i>Carex dudleyi</i>	Dudley's sedge		X			X	
<i>Carex</i> sp.	sedge			X			
<i>Eleocharis parishii</i>	Parish's spike-rush		X			X	
JUNCACEAE	RUSH FAMILY						
<i>Juncus bufonius</i>	toad-rush		X			X	
<i>Juncus dubius</i>	questionable rush			X			
<i>Juncus occidentalis</i>	western rush		X			X	

Scientific Name ¹	Common Name ²	Project Component					New 230 kV Circuit
		Alternative 1	Alternative 2	Alternative 2a	Alternative 3	Reconductoring	
<i>Juncus</i> sp.	rush			X			
LILIACEAE	LILY FAMILY						
<i>Allium</i> sp.	wild onion						
<i>Bloomeria crocea</i>	common goldenstar		X		X	X	X
<i>Calochortus clavatus</i> var. <i>clavatus</i> +	club-haired mariposa lily		X		X	X	
<i>Calochortus clavatus</i> var. <i>gracilis</i> +	slender mariposa lily	X	X		X	X	
<i>Calochortus venustus</i>	butterfly mariposa lily		X		X	X	
<i>Chlorogalum pomeridianum</i>	wavyleaf soap plant		X	X		X	
<i>Dichelostemma capitatum</i>	blue dicks	X	X	X	X	X	X
<i>Muilla maritima</i>	common muilla	X	X			X	X
<i>Yuca whipplei</i>	chapparal yucca	X	X	X	X	X	X
POACEAE	GRASS FAMILY						
<i>Achnatherum coronatum</i>	giant needlegrass	X	X	X		X	X
<i>Achnatherum speciosum</i>	desert needlegrass	X	X	X		X	
<i>Avena barbata</i> *	slender oat	X	X	X		X	X
<i>Avena fatua</i> *	wild oat	X	X	X		X	X
<i>Bromus carinatus</i> var. <i>carinatus</i>	smooth brome		X			X	
<i>Bromus diandrus</i> *	ripgut brome	X	X	X		X	X
<i>Bromus hordeaceus</i> *	soft brome	X	X	X		X	X
<i>Bromus madritensis</i> *	compact brome	X	X	X		X	X
<i>Bromus tectorum</i> *	cheatgrass	X	X	X		X	X
<i>Cynodon dactylon</i>	Bermudagrass	X					
<i>Distichlis spicata</i>	salt grass	X	X			X	
<i>Elymus elymoides</i>	Squirreltail	X					
<i>Elymus glaucus</i>	blue wildrye	X		X			X
<i>Elymus triticoides</i>	beardless wild-rye	X	X			X	X
<i>Elymus</i> sp.	wild rye			X			
<i>Hordeum murinum</i>	barley		X			X	
<i>Lamarckia aurea</i> *	goldentop grass		X	X		X	X
<i>Leymus condensatus</i>	giant wildrye	X	X	X	X	X	X
<i>Melica californica</i>	California melicgrass		X			X	
<i>Melica imperfecta</i>	California melicgrass		X	X		X	X
<i>Nassella cernua</i>	nodding needlegrass		X			X	X
<i>Nassella lepida</i>	foothill needlegrass	X	X			X	X

Scientific Name ¹	Common Name ²	Project Component					New 230 kV Circuit
		Alternative 1	Alternative 2	Alternative 2a	Alternative 3	Reconductoring	
<i>Nassella pulchra</i>	purple needlegrass	X	X			X	
<i>Piptatherum miliaceum</i> *	Smilgrass	X	X	X		X	
<i>Poa secunda</i>	Sandberg bluegrass	X	X	X		X	X
<i>Polypogon monspeliensis</i> *	annual rabbitsfoot grass		X			X	
<i>Schismus arabicus</i> *	Arabian schismus		X			X	
<i>Schismus barbatus</i> *	common Mediterranean grass	X	X	X		X	X
<i>Schismus sp. *</i>	Mediterranean grass		X		X	X	
<i>Vulpia microstachys</i>	small fescue	X	X	X		X	X
<i>Vulpia myuros</i> *	rat-tail fescue	X	X	X		X	X
<i>Vulpia octiflora</i> var. <i>octiflora</i>	six-weeks fescue	X					
TYPHACEAE	CAT-TAIL FAMILY						
<i>Typha latifolia</i>	broadleaf cattail		X			X	

APPENDIX B: DETAILED CONSTRUCTION, OPERATION, AND MAINTENANCE PROCESS

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BARREN RIDGE RENEWABLE TRANSMISSION PROJECT

**Detailed Construction, Operations
and Maintenance Process**



BRRTP CONSTRUCTION, OPERATION AND MAINTENANCE

1.0 230 KV DOUBLE-CIRCUIT TRANSMISSION LINE

1.1 CONSTRUCTION SEQUENCE

Construction of a transmission line involves the following general sequence of events: surveying the centerline; identifying and constructing access roads; clearing right-of-way and tower sites (including construction yards and batch plants); installing foundations; assembling and erecting the towers; clearing, pulling, tensioning, and splicing sites; installing ground wires and conductors; installing counterpoise; switching station tie in; and cleanup and site reclamation. Various phases of construction would occur at different locations throughout the construction process for the Barren Ridge Renewable Transmission Project (BRRTP). This would require several contractors operating at the same time and in different locations.

The following section describes the construction components necessary for the assembly and installation of the proposed double-circuit transmission line. The description of transmission line construction sequencing and estimates for construction sites would also be relevant for the additional transmission line construction activities associated with the installation of the Castaic-Haskell Canyon #4 circuit on existing structures, and the reconductoring of the Barren Ridge – Rinaldi (BR-RIN) transmission line between the Barren Ridge Switching Station and the Rinaldi Substation.

1.1.1 Surveying Activities

The Los Angeles Department of Water and Power (LADWP) must first obtain survey permits for the portion of the Project crossing federal lands managed by the U.S. Department of Agriculture, Forest Service (USFS) and the U.S. Department of the Interior, Bureau of Land Management (BLM), and rights-of-entry for private lands. This would include the issuance of a 50-year term Special Use Permit to LADWP by the USFS and a 30-year term (renewable) Right-of-Way Grant issued by the BLM. For survey on affected private lands, LADWP would need to negotiate rights-of-entry with the local landowners. Once survey permits are obtained, construction survey work would consist of locating the centerline, tower center hubs, ROW boundaries, and tower access roads, some of which would be located outside of the ROW boundaries. Whenever possible, location of the ROW and Project facilities would be laid out to avoid identified sensitive resources. All of these activities would begin approximately one year prior to the start of construction. Cultural resources and necessary additional threatened and endangered species intensive surveys would be conducted once the survey of the centerline and access roads is completed and clearly marked.

Necessary pre-construction geotechnical investigations would include geological field mapping of each tower site, and borings by drill rig for soil sampling and bedrock corings to determine soil densities and bedrock strength. Test locations would include angle points between the Barren Ridge Switching Station and the Angeles National Forest (ANF), and five to ten locations along the selected alignment within the ANF. Seismic analysis of tower sites for slope stability would also be necessary in mountainous areas of the ANF. Existing roads would be used as much as possible, but some new roads could be required.

1.1.2 Preconstruction Weed Removal

LADWP/ANF/BLM shall prepare and implement a comprehensive, adaptive Weed Control Plan on NFS/BLM lands for pre-construction and construction invasive weed abatement. A pre-construction weed inventory shall be conducted by surveying all areas subject to ground-disturbing activity, including, but not limited to, tower pad preparation and construction areas, tower removal sites, pulling and tensioning

sites, assembly yards, and areas subject to grading for new or improved access and spur roads. In areas subject to ground disturbance, weed infestations shall be treated prior to construction according to control methods and practices for invasive weed populations designed in consultation with the USFS/BLM. The Weed Control Plan shall be updated and utilized for eradication and monitoring post construction. Weed control treatments shall include all legally permitted herbicide, manual, and mechanical methods applied with the authorization of the USFS/BLM. The application of herbicides shall be in compliance with all state and federal laws and regulations under the prescription of a Pest Control Advisor (PCA), where concurrence has been provided by the USFS/BLM, and implemented by a Licensed Qualified Applicator. Herbicides shall not be applied during or within 24 hours of a scheduled rain event. Herbicides shall not be used within Riparian Conservation Areas (RCAs) on the ANF without approval of the USFS. In riparian areas, only water-safe herbicides shall be used. Herbicides shall not be applied when wind velocities exceed six miles per hour. Where manual and/or mechanical methods are used, disposal of the plant debris will follow the regulations set by the USFS/BLM. The timing of the weed control treatment shall be determined for each plant species in consultation with the USFS/BLM (on NFS/BLM lands, respectively) with the goal of controlling populations before they start producing seeds.

1.1.3 Construction of Access Roads

The construction, operation, and maintenance of the proposed transmission line would require that heavy vehicles access tower sites along the right-of-way. Where new access roads are required, they would be constructed to support the weight of these vehicles and would typically be 16 feet wide, consisting of a 14-foot driving surface with a side drainage system between one and two feet in width. Permanent roads would be constructed where necessary for operation or maintenance, or where it is required by the landowner or land managing agency. Road standards would be addressed specifically in the Construction, Operation, and Maintenance Plan (COM Plan) and the Plan of Development (POD) during the engineering phase of the Project, and prior to a Notice to Proceed from the USFS and BLM.

Dependent upon final design and mitigation, some temporary access roads may be constructed as part of the Project. These would typically be 16 foot wide roads, but would typically have no improved ditch drainage systems. Most temporary roads would be constructed by crushing vegetation. In some areas, material and topsoil from the temporary roads would be bladed to one or both sides to facilitate rehabilitation. Following construction, bladed material can be re-spread across the disturbed road section. Seeds and roots contained within the re-spread topsoil layer normally provide a natural source for new growth.

Existing paved and unpaved highways and roads would be used where possible. Roads along existing utility corridors would also be used where possible to minimize new access road construction. In locations where existing roads can be used that are located in close proximity to the proposed centerline of the transmission line, only spur roads to the tower sites would be required. New access roads and spur roads would likely be constructed into the right-of-way where existing roads do not exist. Table 1 lists the estimated ground disturbance of access and spur roads based on terrain.

TABLE 1. ACCESS AND SPUR ROAD GROUND DISTURBANCE ESTIMATES

Ground Disturbance Categories	Access Roads		Spur Roads (average width 16 feet)	
	Average Miles of Roads Per Mile of Transmission Line	Average Acres of Disturbance Per Mile of Transmission Line*	Average Miles of Roads Per Mile of Transmission Line	Average Acres of Disturbance Per Mile of Transmission Line
1. Existing roads or agricultural land; no widening anticipated	n/a	n/a	0.3	0.6
2. Existing 8 ft wide roads that require an additional 8 ft of widening	1.0 to 2.5	Permanent 0.9 to 2.4	0.3	0.6
3. Construct new road on flat terrain (0-10%)	1.0 to 2.5	Permanent 1.9 to 4.8	0.3	0.6
4. Construct new road on sloping terrain (10-20%) ¹	2.5 to 4.0	Temporary 7.3 to 11.6 Permanent 4.8 to 7.7	0.5	1.0
5. Construct new road on steep terrain (20-30%) ^{1, 2}	4.0 to 6.0	Temporary 23.3 to 34.9 Permanent 7.7 to 11.6	0.8	1.6
6. Construct road on very steep terrain (greater than 30%) ^{1, 2}	6.0 to 8.0	Temporary 69.8 to 93.1 Permanent 11.6 to 15.5	1.0	1.9

¹ After construction of the transmission line, all access roads in Categories 4 through 6 would be restored back to 16 feet wide.

² On steep terrain (approximately 25% or higher) with limited access on the Angeles National Forest, the USFS may require Helicopter Mitigation.

Wherever possible, roads would be built at right angles to streams and washes. Culverts or other drainage structures would be installed as necessary across drainages, but the roads would usually follow the natural grade. In addition, road construction would include dust-control and erosion control measures in sensitive areas. All existing roads would be left in a condition equal to or better than their condition prior to the construction of the transmission line without changing their service level. Gates would be installed where required at fenced property lines to restrict general vehicular access from or to the right-of-way. Where identified within the environmental studies for mitigation purposes, access roads may be excluded or limited within specific sensitive areas, such as Riparian Conservation Areas (RCAs) on the Angeles National Forest.

1.1.4 Clearing Right-of-Way

The clearing of some natural vegetation may be required. However, selective clearing would be performed only when necessary to provide for surveying, electrical safety clearances, line reliability, and maintenance. Trimming or removal of mature vegetation, under or near the conductors, would be done to provide adequate electrical clearance as required by the National Electrical Safety Code, the North American Electrical Reliability Corporation, and California Public Utilities Commission General Order 95 standards.

Trees that could fall onto the lines or affect lines during wind-induced line swing would be removed. Normal clearing procedures are to top or remove large trees and not disturb smaller trees. Where there is a direct conflict between trees and clearance standards, the removal of trees would be jointly reviewed and agreed upon between LADWP and the owners or managers of the property. Rights-of-way would not be chemically treated unless necessary to comply with requirements of a permitting agency. On National Forest System (NFS) lands, approved herbicides would be utilized within the Project area on select invasive plant species. Invasive plant surveys and control would continue for the life of the Project.

1.1.5 Tower Site Clearing

After access roads are developed, preparation of individual structure sites would be required to install the structures. At tower locations, work areas of up to 200 feet squared in flat terrain and up to 200 by 250 feet in areas with slopes greater than eight percent may be needed. Within the work areas, at some tower locations, a level cleared area (pad) may be necessary to complete the construction of the towers. However, many tower sites would be considerably smaller depending on the size of the tower, the terrain, resource considerations, and whether helicopter construction was used, among other factors. The work area would be required for the location of tower footings, assembly of the tower, and the necessary crane maneuvers. Vegetation would be mostly crushed, and cleared only when necessary. All pads not needed for normal transmission line maintenance would be graded to blend as near as possible with the natural contours, and revegetated where required by a permitting agency. See Table 2 for tower specifications and Table 5 for estimated temporary and permanent ground disturbance associated with the double-circuit steel lattice towers.

TABLE 2. DOUBLE-CIRCUIT STEEL LATTICE TOWER SPECIFICATIONS

Tower Placement Details	Specifications	
	Categories 1 through 3 Flat (0 – 10% slope)	Categories 4 through 6 Mountainous (10 – 30% slope)
Towers per mile	±5	±5
Average span length	1,100 ft.	1,000 ft.
Average height		
Ground to lowest attachment	115 ft.	105 ft.
Upper body height	52 ft.	52 ft.
Overall tower height	167 ft.	157 ft.
Typical range of heights of new towers	120 – 195 ft.	110 – 185 ft.

1.1.6 Staging Areas and Batch Plants

It is anticipated that one or two construction yards or staging areas would be required for materials storage, construction equipment, construction vehicles, and temporary construction offices. Staging areas would be approximately five acres in size, and located centrally or near each end of the transmission line route. The staging areas would be located on previously disturbed private land and would be level and surfaced with crushed aggregate base. The LADWP would negotiate with landowners for specific locations of the staging areas.

Concrete for use in constructing foundations would be dispensed from a portable concrete batch plant located at approximately 15 mile intervals. A rubber-tired flatbed truck and tractor would be used to relocate each plant along the right-of-way. Commercial ready-mix concrete would be used when access to tower construction sites is economically feasible.

The construction yards and batch plants would be located on private land and serve as field offices, reporting locations for workers, parking space for vehicles and equipment, sites for material storage, and stations for equipment maintenance. Facilities would be fenced and their gates locked. Security guards would be stationed where needed. See Table 3 for estimated ground disturbance associated with the staging sites and batch plants.

TABLE 3. STAGING SITES AND BATCH PLANT GROUND DISTURBANCE ESTIMATES

Disturbance Description	Categories 1 through 3 Flat (0 – 10% slope)*	
	Maximum Estimated Disturbance Dimension per site	Average Disturbance
Material staging sites (2 sites)	400 x 540 ft. (5 acres)	N/A
Concrete batch plants (3 sites maximum)	2 acres, 30 mile haul distance	0.2 acre per mile
Total Average Disturbance	0.2 acre per mile	

*Material staging sites and concrete batch plants would not be built on terrain above 10% slope.

1.1.7 Foundation Installation

Tower foundations for the lattice structures would consist of drilled concrete piers. The foundation process would start with the boring of four holes for each lattice structure or one hole for each TSP. The holes would be bored using truck- or track-mounted excavators with various diameter augers to match diameter and depth requirements of the foundation sizes.

For a typical suspension lattice tower, each hole would typically be four feet in diameter and 25 feet deep, depending on soil conditions. For the larger angle or dead-end structures, foundations could be up to 30 or more feet deep, depending on soil conditions. Each foundation would extend above the ground line between six inches and four feet. In extremely sandy areas, soil stabilization by water or a gelling agent may be used prior to excavation. Refer to Figure 1 and Figure 2 for typical foundation details for double-circuit towers.

Following excavation of the foundation holes, each footing would be constructed by placing formwork, reinforcing steel and a tower stub into the foundation hole, positioning the stub, and encasing it in concrete. Reinforcing steel cages would be assembled at laydown yards and delivered to each structure location by flatbed truck. Spoil material would be spread around the tower site and used for fill where suitable. The foundation excavation and installation would require access to the site by a power auger or drill, a crane, material trucks, and ready-mix trucks. Typical suspension structures would require approximately 25 to 40 cubic yards of concrete and dead-end structures would require approximately 120 cubic yards of concrete.

FIGURE 1. TYPICAL FOUNDATION DESIGN FOR THE DOUBLE-CIRCUIT STEEL LATTICE TOWERS

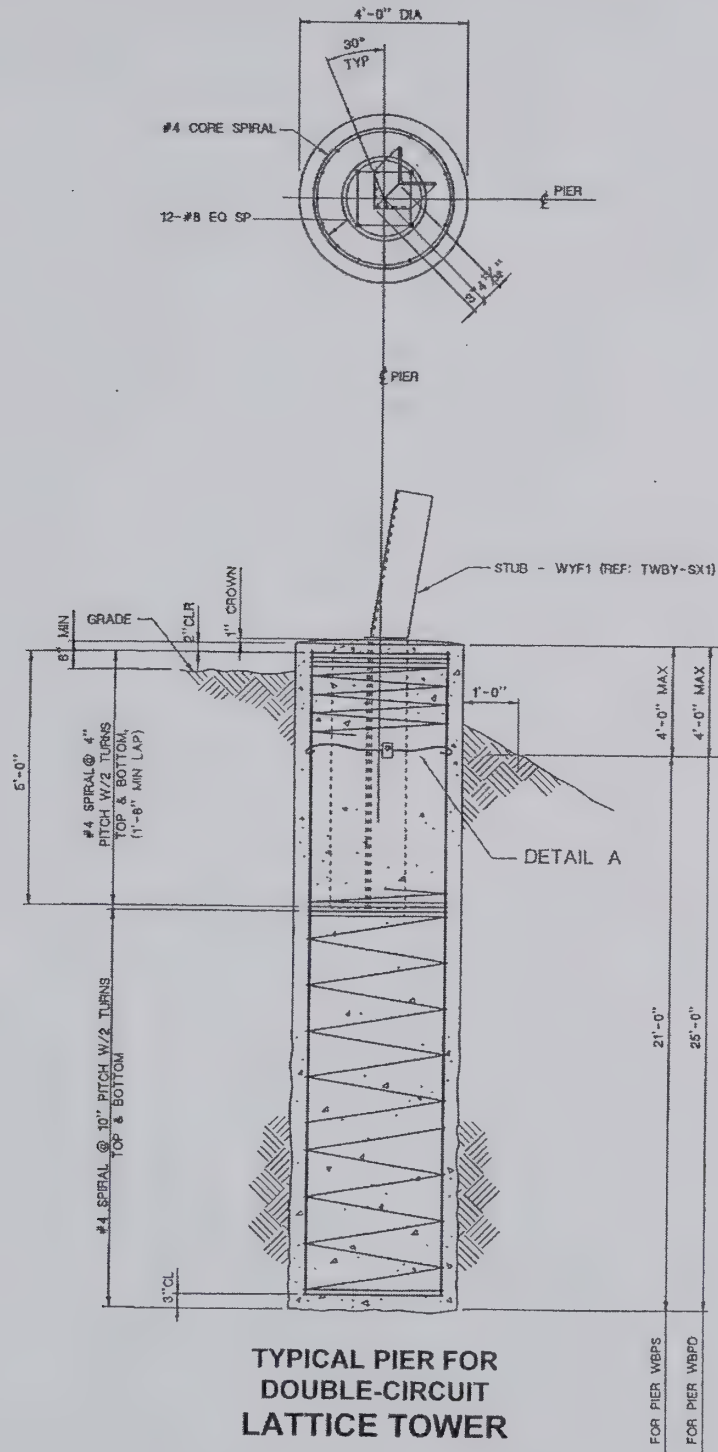
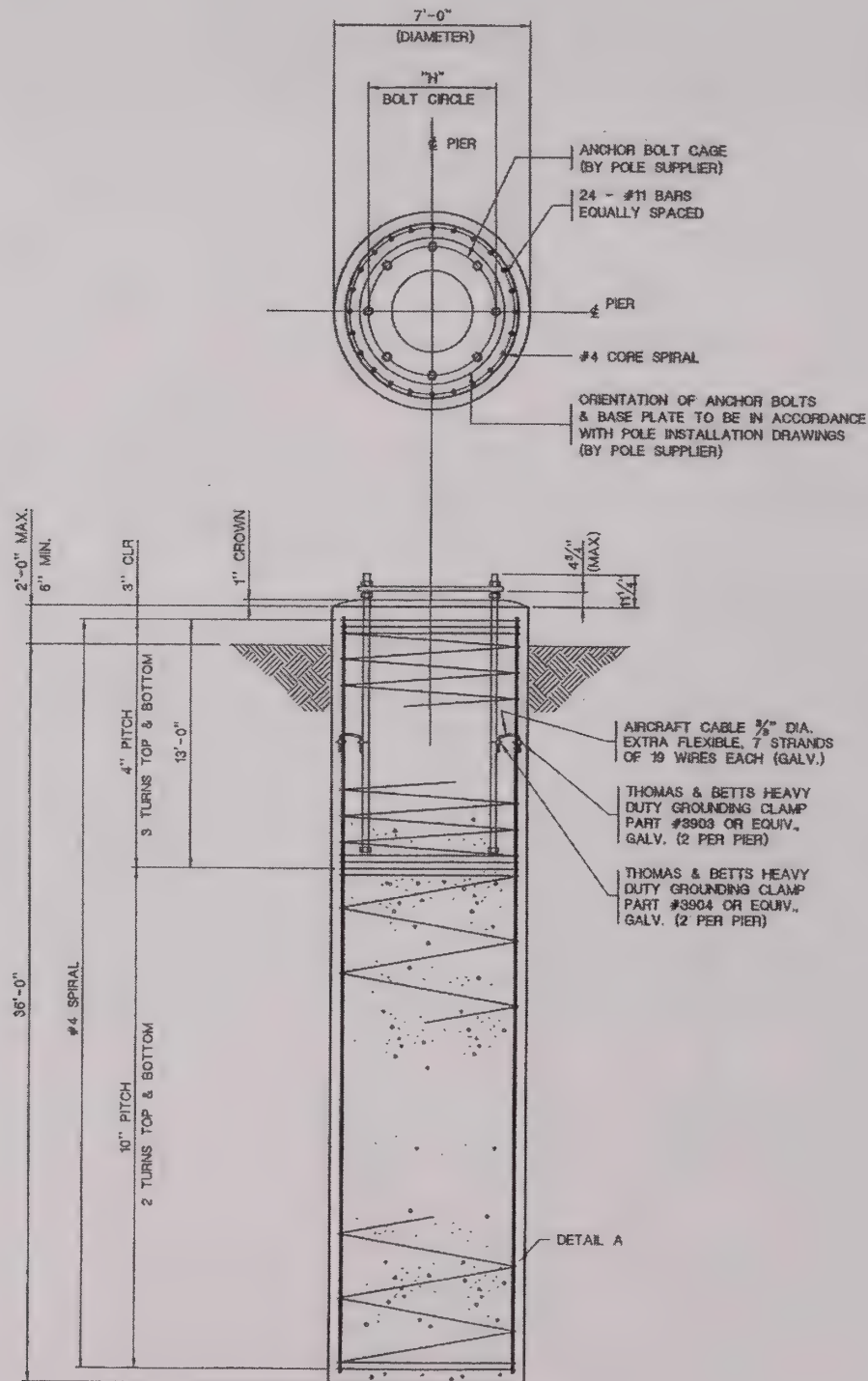


FIGURE 2. TYPICAL FOUNDATION DESIGN FOR TUBULAR STEEL POLES



TYPICAL PIER FOR DOUBLE-CIRCUIT POLE

1.1.8 Tower Assembly and Installation

The size of the work areas for structures (assembly and installation sites) would be approximately 40,000 to 50,000 square feet (1 acre = 43,560 ft²) depending on terrain. The location of these sites has not yet been determined, but exact locations would be identified within the COM Plan and POD prior to a Notice to Proceed from the agencies. Lattice towers would be assembled at each site, installed and bolted to the foundations. Bundles of steel members and associated parts would be transported to each tower site by truck. Steel members would be assembled into subsections of convenient size and weight on the ground. Assembly would be facilitated with a small rough-terrain crane. The assembled subsections would be erected into place by a large crane and then fastened together in the air to form a complete tower. See Figure 3 for an illustration of typical tower assembly and installation activities.

FIGURE 3. TYPICAL TOWER ASSEMBLY AND INSTALLATION ACTIVITIES



1.1.9 Conductor Installation

After the towers are erected, insulators, hardware, and stringing sheaves would be delivered to each tower site. The towers would be rigged with insulator strings and stringing sheaves at each ground wire and conductor position. Sheaves are rollers, temporarily attached to the lower end of the insulators that allow the conductor to be pulled, or “strung,” along the line.

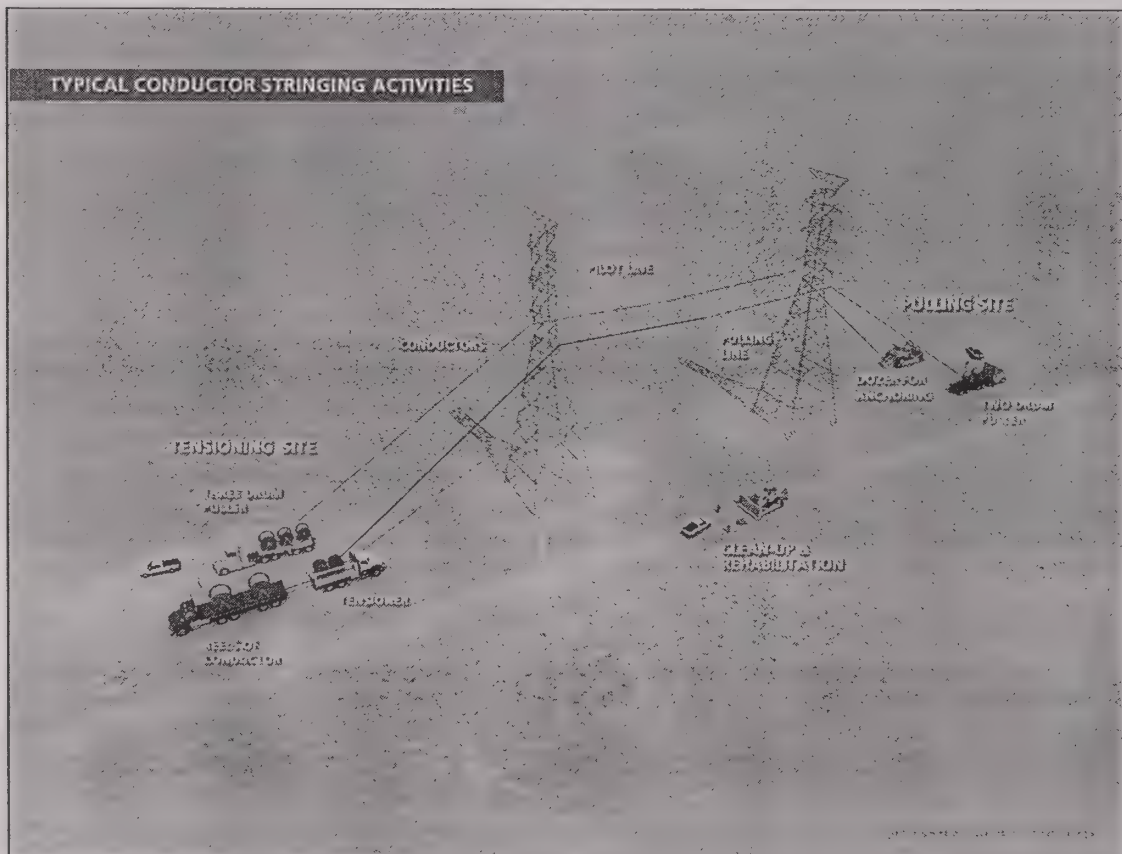
For public protection during wire installation, temporary guard structures would be built next to highways, railroads, power lines, structures, and other major obstacles. Guard structures would consist of

H-frame poles placed on either side of an obstacle. These structures would prevent ground wire, conductor, or equipment from falling on an obstacle. Equipment for installing guard structures would include augers, line trucks, pole trailers, and cranes. A guard structure would be anticipated to be necessary every five miles. The amount of ground disturbance would typically be 200 feet by 300 feet. The guard structures would be left in place until conductors and ground wires were strung, tensioned and clipped; this time frame would be approximately three weeks or longer depending on conditions. Guard structures may not be necessary for small roads. In such cases, other safety measures, such as barriers, flagmen, or other traffic control, would be used.

Pilot lines would be pulled (strung) from tower to tower by a helicopter and threaded through the stringing sheaves at each tower. The pilot line can be used to pull in the ground wire, but is used to pull in a larger-diameter, stronger pulling line for the conductor. The larger-diameter, stronger line—pulling line—would be attached to the conductors to pull them onto towers. This process would be repeated until the ground wire or conductor is pulled through all sheaves. Bundled conductors would be pulled together with the assistance of a running board. The running board attaches the bundled conductor to the pulling line.

Ground wire and conductors would be strung using powered pulling equipment at one end and powered braking or tensioning equipment at the other end of a conductor segment as shown on Figure 4. Sites for tensioning equipment and pulling equipment would be approximately 2.5 miles apart.

FIGURE 4. TYPICAL CONDUCTOR STRINGING ACTIVITIES



To the greatest extent practical, pulling and tensioning sites would be located within the transmission ROW. However, some pulling and tensioning sites may occur outside the ROW. The tensioning and pulling sites could be as large as 200 feet by 500 feet, however they would be limited in size depending on each specific location and what is reasonable for safe construction practices. The size of each site would be limited as much as possible and would be designed in coordination with the responsible property owner or land management agency. Depending on topography, some grading may be required at pulling and tensioning sites to create level pads for equipment. Tensioners, line trucks, wire trailers, and tractors needed for stringing and anchoring the ground wire or conductor would be located at the tensioning sites. A puller, line trucks, sag cat and tractors would be needed for pulling and temporarily anchoring the ground wire and conductor. Table 5 includes ground disturbance estimates for conductor installation (helicopter fly yards, portable helicopter landing pads, pulling and stringing sites, and sleeving and stringing operations).

After installing the conductor ground wire or fiber optic shield wire, sagging, clipping and dead-ending activities, terminating the conductors at dead-end structures, would be performed. This process would involve adjusting the position of the conductors and shield wires, removing stringing sheaves, and permanently attaching the conductor to the insulators with specialized hardware.

1.1.10 Counterpoise Installation and Grounding Practices

Part of standard construction practice prior to wire installation would involve measuring the resistance of tower footings and installation of counterpoise (grounds) as needed. To determine if a tower would require counterpoise, ground resistance measurements would be taken at towers sites after the installation of the foundations and structures. The measurements would be evaluated to determine the numbers and locations of structures requiring counterpoise. If the resistance to remote earth for each transmission tower is greater than 10 ohms, counterpoise (grounds) would be installed to lower the resistance to 10 ohms or less. Counterpoise would consist of a bare copper-clad or galvanized steel cable buried a minimum of 12 inches deep, extending horizontally from one or more tower legs for approximately 200 feet. Typical counterpoise installation would include two installations per structure on opposite tower legs. Four installations per tower could be required in certain circumstances.

In addition to counterpoise installation, standard grounding practices during construction would include both temporary and permanent grounding of equipment and structures, such as fences or pipelines, as necessary to reduce any potential magnetically induced voltages to harmless levels. Such practices could include electrical isolation of equipment or structures and the installation of grounding wires.

1.1.11 Switching Station Tie-in

At the proposed Haskell Canyon Switching Station, the transmission lines would be connected into and out of the switching station through dedicated station structures within the switching station, commonly referred to as “bus.”

1.2 UPKEEP OF CONSTRUCTION SITES

Construction sites, material storage yards, and access roads would be kept in an orderly condition throughout the construction period. Refuse and trash would be removed from the sites and disposed of in an approved manner. Oils and fuels would not be dumped along the line. Oils or chemicals would be hauled to a disposal facility authorized to accept such materials. No open burning of construction trash would occur without agency approval.

Microtrash would be cleaned daily from all work areas within known California condor habitat. Microtrash is a term used to describe small bits of debris like bottle caps, rags, screws, bolts, wires, glass, and other materials found in condor habitat.

1.3 HAZARDOUS MATERIALS WITHIN THE PROJECT AREA

Petroleum products such as gasoline, diesel fuel, helicopter fuel, crankcase oil, lubricants, and cleaning solvents would be present within the Project area during construction. These products would be used to fuel, lubricate, and clean vehicles and equipment. These products would be containerized by fuel trucks or by approved containers. When not in use, hazardous materials would be properly stored to prevent drainage or accidents.

Hazardous materials would not be drained onto the ground or into streams or drainage areas. Totally enclosed containment shall be provided for all trash. All construction waste including trash and litter, garbage, other solid waste, petroleum products, and other potentially hazardous materials would be removed to a disposal facility authorized to accept such materials.

All construction, operation, and maintenance activities would comply with all applicable federal, state, and local laws and regulations regarding the use of hazardous substances.

The construction or maintenance crew foreman would insure that all applicable laws are obeyed. In addition, an on-site inspector would be present during construction to make sure that all hazardous materials are used and stored properly. A health and safety plan would be developed as part of the COM Plan and POD during the engineering and preconstruction phase of the Project.

1.4 SITE RECLAMATION

The ROW, including temporary construction sites, and any temporary ground disturbance outside of the ROW that may have been caused during or due to the construction of the Project (e.g., temporary access roads, staging sites, assembly yards) would be restored as required by the property owner or land management agency. All practical means would be used to restore the land to its original contour and to restore natural drainage patterns along the ROW. Because revegetation would be difficult in many areas of the Project where precipitation is minimal, it would be important to minimize disturbance during construction. All practical means would be used to increase the chances of vegetation reestablishment in disturbed areas.

The total construction period would be approximately two years. The COM Plan that would be completed during the engineering and preconstruction phase of the Project would address specific site reclamation of all disturbed areas.

1.5 FIRE PROTECTION

A Fire Management Plan would be developed for the Project and all applicable fire laws and regulations would be observed during the construction period. All personnel would be advised of their responsibilities under the applicable fire laws and regulations, including taking practical measures to report and suppress fires.

1.6 CONSTRUCTION MONITORING

An approved compliance program would be developed to address mitigation requirements associated with the avoidance of sensitive plant and animal species, cultural sites, or other sensitive features located

within or adjacent to the Project. Prior to construction, these measures will be described in detail and included in the POD.

1.7 THREE-CIRCUIT TOWER MITIGATION

A temporary transmission line would be constructed to keep the BR-RIN circuit energized during construction of the three-circuit towers. After the temporary line is constructed, the existing BR-RIN single-circuit towers would be removed to allow the new three-circuit towers to be constructed within the existing ROW. Once construction of the three-circuit towers is completed, the temporary transmission line would be removed.

The temporary transmission line would be 7.5 miles long and would consist of wood and steel single poles with an average height of 95 feet, a 3-foot by 3-foot footprint, and an average of eight poles per mile. Construction would occur within a temporary 80- to 100-foot ROW. Refer to Table 4 for specifications and to Table 5 for ground disturbance estimates. The majority of the temporary transmission line would be constructed along San Francisquito Road. Portions would also be constructed along Elizabeth Lake Road and Johnson Road. Pole placement would be adjacent to public roadways wherever possible. If necessary, temporary ROW on private property would be needed where poles could not be placed within public road ROW. The majority of poles would be direct-embedded when set in place and would not require a permanent foundation. Where additional strength is necessary at larger angle points, steel poles would be required, which could require an excavation approximately 6 feet in diameter by 20 feet deep to accommodate the concrete pier foundation that would be cast in place. Once all the poles have been constructed and the conductor installed, the existing BR-RIN circuit would be connected into the temporary line and energized. The construction would require establishment of a staging area, work areas around poles, and pull and tension sites. Access to pole sites and pull and tension sites would be from the adjacent roadways.

Approximately seven miles of the existing BR-RIN single-circuit towers would be removed, with existing ROW utilized to access the existing towers. The new three-circuit towers would be placed within the existing ROW, utilizing existing access roads. Helicopter Mitigation, as described in this section below, would be applied in steeper terrain crossing the Angeles National Forest if additional access is required. If additional access roads, considered to be longer than 300 feet, are necessary, specific locations and construction method (either helicopter or conventional) would be coordinated with the USFS. The new three-circuit tower would require a 25-foot by 30-foot structure footprint and an average of seven structures per mile; the average structure height would be 170 feet, with a maximum tower-to-tower span length of 780 feet. Structures would be installed in the same locations as the existing BR-RIN structures within the limits of standard tower design. The construction process for the new three-circuit towers would be the same as the double-circuit towers discussed above. After completion of construction of the three-circuit towers, the temporary transmission line would be removed and all temporary staging and work area land disturbances would be restored as close to previous conditions as possible and revegetated as required. Restoration practices would be consistent with Section 1.11 Decommissioning of Transmission Lines.

TABLE 4. THREE-CIRCUIT TOWER SPECIFICATIONS

Tower Placement Details	Specifications	
	Triple-Circuit	Temporary Transmission Line
ROW acquisition	None (within existing)	80-100 ft
Structures per Mile	7	8
Average span length	750 ft	650 ft

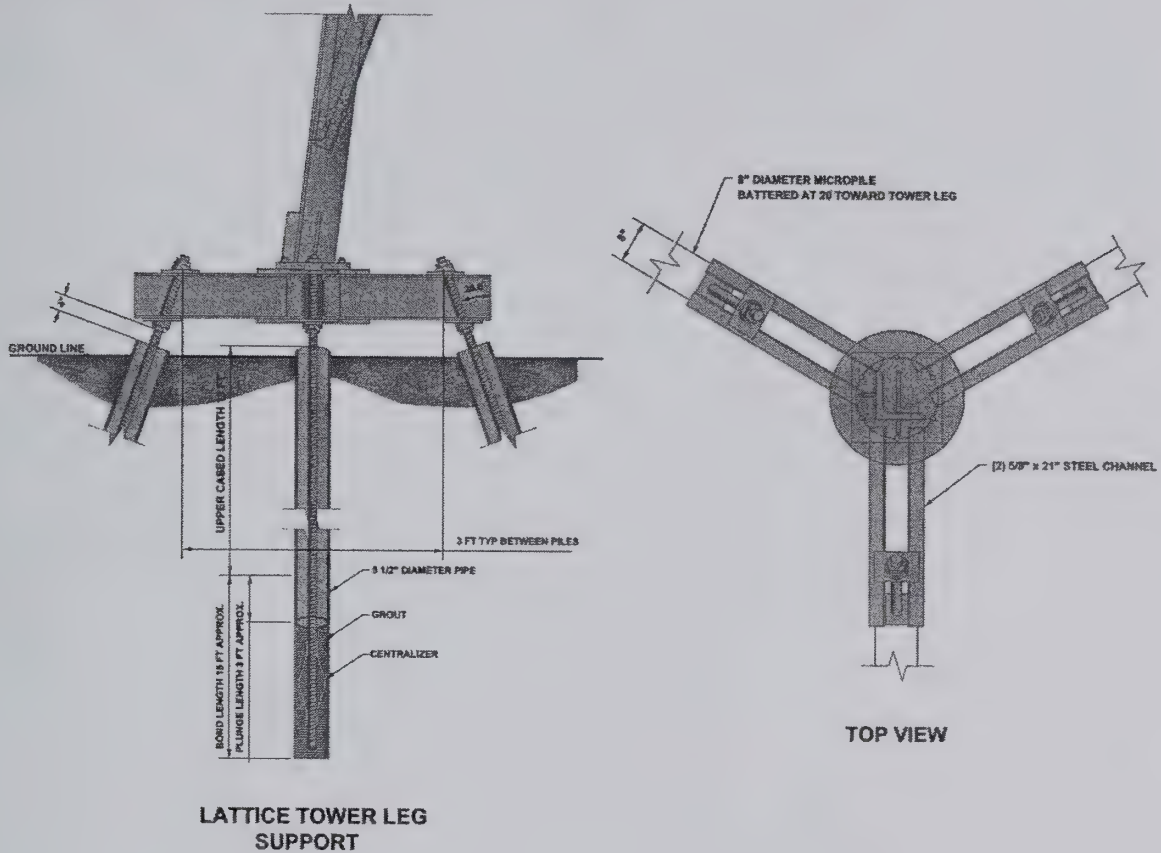
Tower Placement Details	Specifications	
	Triple-Circuit	Temporary Transmission Line
Average height (ft)	120	60
Ground to lowest attachment		
Upper body height	50	45
Overall tower height	170	105
Typical range of heights of new towers	150 - 180 ft.	95 - 105 ft.

1.8 HELICOPTER MITIGATION

The following sites and ground disturbing construction activities would be required to construct the new transmission line within the identified helicopter construction areas: portable landing pads, helicopter fly yards/staging areas and associated temporary access roads, tower structure vegetation clearing, guard structures at major crossings, and access road pullouts. Refer to Table 5 for ground disturbance estimates for the Helicopter Mitigation.

The transmission line materials (tower steel, conductor reels, structure hardware, etc.) would be delivered by truck to the helicopter fly yards/staging areas. Vegetation clearing may be required at these sites to ensure safe working conditions. The fly yards/staging areas would serve as helicopter support yards for fueling and maintenance, as well as for the transport of materials and personnel. Towers may also be assembled in sections at these yards prior to delivery to the tower sites. Heavy lift helicopters would then fly the towers from the yards to the tower sites.

Portable landing pads would be located at each tower site. These pads would allow helicopters to load and unload personnel, tools, and equipment necessary for construction of foundations and assembly of tower structures. Helicopter-constructed towers that would not be in close proximity to existing access roads would utilize micropile foundations. For each tower leg, micropile foundations would use a group of three to eight 6- to 9-inch diameter casings that would be drilled and grouted into the ground. The exposed portion of the pile group would be encased in a reinforced concrete cap from the top of the casings to a depth anywhere from one to eight feet below the ground surface, depending on the terrain. Figure 5 illustrates the plan view and sections of a micropile foundation.

FIGURE 5. MICROPILE FOUNDATION

Conductor installation would proceed as for double-circuit tower installation. The equipment necessary for conductor installation would be large, heavy construction equipment that could only be brought in by truck. Some NFS roads could need maintenance or improvement to allow pulling and tensioning, but no new access or spur roads would be created for conductor installation on the helicopter-constructed towers.

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TABLE 5 GROUND DISTURBANCE ESTIMATES FOR

Disturbance Description	Disturbance Dimension	Helicopter Mitigation (Steel Lattice Towers with Helicopter Installation of Towers and Conductors)	
		Estimated Disturbance Dimension	Average Disturbance
Tower installation	200	100 x 100 ft. (0.2 acre) per tower ±5 towers per mile	1 acre per mile
Guard structures at major crossings	C	200 x 300 ft. (1.3 acres) One crossing every 5 miles	0.3 acre per mile
Helicopter fly yards / staging areas (includes fueling station at one of the sites)		650 x 650 ft. (10 acres) One site every 5 miles	2 acres per mile
Landing area/Portable helicopter landing pads (includes vegetation clearing for site)	50	50 x 50 ft. (0.06 acre) per site Five sites per mile	0.3 acre per mile
Pulling and tensioning sites	200	200 x 500 ft (2.3 acres) per site One site every 2.5 miles**	0.9 acre per mile
Sleeving and miscellaneous stringing operations	100	100 x 200 ft. (0.5 acre) per site One site every 2.5 miles	0.2 acre per mile
Total Average Temporary Disturbance³		3.7 acres per mile	
Tower sites, including vegetation clearance within a 10-foot radius around base of towers in accordance with state law		60 x 60 ft. (0.08 acre) ±5 towers per mile	0.2 acre per mile
Total Average Permanent Disturbance⁴		0.2 acre per mile	

Information based on LADWP and POWER Engineers, Inc. estimates.

¹ For slopes over 10% (ground disturbance categories 4-6), site dimensions

² For slopes over 10% (ground disturbance categories 4-6), sites would

³ Access and spur road disturbances included in Table 1.

⁴ Ibid.

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TABLE 5 GROUND DISTURBANCE ESTIMATES FOR THE PROPOSED 230 kV DOUBLE-CIRCUIT TRANSMISSION LINE

Disturbance Description	Double-Circuit Steel Lattice Towers with Helicopter Stringing of Conductors		Three-Circuit Tower Mitigation (Three-Circuit Steel Lattice Towers with Helicopter Stringing of Conductors)				Helicopter Mitigation (Steel Lattice Towers with Helicopter Installation of Towers and Conductors)	
			Three-Circuit		Temporary Transmission Line			
	Estimated Disturbance Dimension	Average Disturbance	Estimated Disturbance Dimension	Average Disturbance	Estimated Disturbance Dimension	Average Disturbance	Estimated Disturbance Dimension	Average Disturbance
	Temporary Disturbance During Installation							
Tower installation	200 x 200 ft. (0.9 acre) per tower ±5 towers per mile ¹	4.6 acres per mile	200 x 200 ft. (0.9 acre) per tower ±7 towers per mile	6.4 acres per mile	50 X 100 ft. (0.1 acre) per tower ±8 towers per mile	0.9 acre per mile	100 x 100 ft. (0.2 acre) per tower ±5 towers per mile	1 acre per mile
Guard structures at major crossings	200 x 300 ft. (1.4 acres) One crossing every 5 miles	0.3 acre per mile	200 x 300 ft. (1.4 acres) One crossing every 5 miles	0.3 acre per mile	40 X 100 ft. (0.09 acres) One crossing every 5 miles	0.02 acre per mile	200 x 300 ft. (1.3 acres) One crossing every 5 miles	0.3 acre per mile
Helicopter fly yards / staging areas (includes fueling station at one of the sites)	200 x 200 ft.(0.9 acre) One site every 5 miles	0.2 acre per mile	200 x 200 ft (0.9 acre) One site every 5 miles	0.2 acre per mile	200 x 200 ft (0.9 acre) One site every 5 miles	0.2 acre per mile	650 x 650 ft. (10 acres) One site every 5 miles	2 acres per mile
Landing area/Portable helicopter landing pads (includes vegetation clearing for site)	50 x 50 ft(0.06 acre) per site One site every 3.5 miles	0.02 acre per mile	50 x 50 ft (0.06 acre) per site One site every 3.5 miles	0.02 acre per mile	50 x 50 ft (0.06 acre) per site One site every 3.5 miles	0.02 acre per mile	50 x 50 ft. (0.06 acre) per site Five sites per mile	0.3 acre per mile
Pulling and tensioning sites	200 x 500 ft (2.3 acres) per site One site every 2.5 miles ²	0.9 acre per mile	200 x 500 ft (2.3 acres) per site One site every 2.5 miles**	0.9 acre per mile	200 x 500 ft (2.3 acres) per site One site every 2.5 miles**	0.9 acre per mile	200 x 500 ft (2.3 acres) per site One site every 2.5 miles**	0.9 acre per mile
Sleeving and miscellaneous stringing operations	100 x 200 ft. (0.5 acre) per site One site every 2.5 miles	0.2 acre per mile	100 x 200 ft. (0.5 acre) per site One site every 2.5 miles	0.2 acre per mile	50 x 100 ft (0.1 acres) per site One site every 2.5 miles	0.05 acre per mile	100 x 200 ft. (0.5 acre) per site One site every 2.5 miles	0.2 acre per mile
Total Average Temporary Disturbance ³	6.2 acres per mile		8 acres per mile		2.1 acres per mile		3.7 acres per mile	
	Permanent Disturbance							
Tower sites, including vegetation clearance within a 10-foot radius around base of towers in accordance with state law	60 X 60 ft (0.08 acres) ±5 towers per mile	0.2 acre per mile	45 x 50 ft. (0.05 acre) ±7 towers per mile	0.14 acre per mile	N/A	N/A	60 x 60 ft. (0.08 acre) ±5 towers per mile	0.2 acre per mile
Total Average Permanent Disturbance ⁴	0.2 acre per mile		0.14 acre per mile		N/A		0.2 acre per mile	

Information based on LADWP and POWER Engineers, Inc. estimates. Actual disturbance areas may be smaller based on final engineering design.

¹ For slopes over 10% (ground disturbance categories 4-6), site dimensions would be 200 x 250 ft. (1.2 acres) and have an average disturbance of 5.8 acres per mile.

² For slopes over 10% (ground disturbance categories 4-6), sites would be every 2 miles and have an average disturbance of 1.2 acres per mile.

³ Access and spur road disturbances included in Table 1.

⁴ Ibid.

1.9 OPERATION OF TRANSMISSION LINES

The nominal voltage for the BRRTP transmission line would be 230 kV AC. There may be minor variations of up to five percent above the nominal level depending upon load flow.

1.9.1 Permitted Uses

After the transmission line has been energized, land uses that are compatible with safety regulations (such as agriculture and grazing) would be permitted in and adjacent to the right-of-way. Incompatible land uses within the right-of-way include construction and maintenance of inhabited dwellings, and any use requiring changes in surface elevation that would affect electrical clearances of existing or planned facilities.

Land uses on public lands that comply with local regulations would be permitted adjacent to or within the ROW, with require approval from the appropriate agency. Permission to use the ROW on private lands would have to be obtained from the utility owning the transmission line.

1.9.2 Safety

Safety is a primary concern in the design of this 230 kV transmission line. The AC transmission line would be protected with power circuit breakers and related line relay protection equipment. If conductor failure occurs, power would be automatically removed from the line. Lightning protection would be provided by overhead ground wires along the line. Electrical equipment and fencing at the switching station would be grounded. All fences, metal gates, pipelines, and other metal components that cross or are within the transmission line ROW would be grounded to prevent electrical shock. If applicable, grounding outside of the ROW may also occur.

1.10 MAINTENANCE OF TRANSMISSION LINES

The 230 kV transmission line would be inspected several times annually by both ground and air patrols. Maintenance would be performed as needed. When access is required for non-emergency maintenance and repairs, LADWP would adhere to the same precautions and procedures that were taken during the original construction.

Emergency maintenance would involve prompt movement of repair crews to repair or replace any damaged equipment or infrastructure. Crews would be instructed to protect crops, plants, wildlife, and other resources of significance. Restoration procedures following completion of repair work would be those prescribed for project implementation construction. The comfort and safety of local residents would be provided for by limiting noise, dust, and the danger caused by maintenance vehicle traffic. Details would be provided in the COM Plan and POD prior to line construction.

1.10.1 Vegetation Management

Vegetation management along the transmission line ROW would be required by the North American Reliability Council (NERC). In compliance with the NERC's Standard FAC-003-1, LADWP would prepare a Vegetation Management Plan for the BRRTP. The Vegetation Management Plan would be included in the COM Plan to be completed prior to the issuance of a Notice to Proceed from the USFS and BLM. Vegetation management would consist of routine tree trimming to maintain the required minimum 10-foot clearance from conductors to vegetation (California Public Resources Code [PRC] 4293); clearance of flammable brush vegetation within a 10-foot radius around the base of transmission line towers in accordance with California PRC 4292; and clearance immediately adjacent to access roads to permit adequate access to the facilities.

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Land uses on public lands that comply with local regulations would be permitted adjacent to or within the ROW, with require approval from the appropriate agency. Permission to use the ROW on private lands would have to be obtained from the utility owning the transmission line.

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1.10.2 Access Road Maintenance

Ongoing access road maintenance would be conducted in accordance with existing or new road authorizations issued to LADWP. Access road maintenance consists of those activities necessary to allow continued access to the ROW and/or each tower structure. These activities may include grading, and maintenance of drainage systems, bridges, culverts, fences, gates and signs. Motor graders, backhoes, dump trucks and pickups are used to maintain access roads.

1.11 DECOMMISSIONING OF TRANSMISSION LINES

At the end of the useful life of the proposed Project, if the facility were no longer required, or if extension of the authorizations were not granted by federal land agencies at the time they expired, the transmission line would be abandoned. Subsequently, conductors, insulators and hardware would be dismantled and removed from the ROW. Tower structures would be removed and foundations broken off below ground surface.

If the line and associated ROW are abandoned at some future date, the ROW would be available for the same uses that existed prior to construction of the Project. Following abandonment and removal of the transmission line from the ROW, any areas disturbed to dismantle the line would be restored and rehabilitated as near as possible to their original condition.

2.0 ADDITION OF NEW 230 KV CIRCUIT

Between the proposed Haskell Canyon Switching Station and the existing Castaic Power Plant, LADWP proposes the addition of 12 miles of a new 230 kV transmission circuit onto existing Castaic – Olive 230 kV Transmission Line structures (towers 1-1 through 12-1). This new circuit would be called Castaic – Haskell Canyon #4 and would utilize the same conductor (2,156 kcmil “Bluebird” ACSS/AW) as that proposed for the new 230 kV transmission line between Barren Ridge and Haskell Canyon Switching Stations.

The addition of a new circuit on existing towers would require many of the same activities of a new transmission line (surveying of ROW, rehabilitation of existing access and spur roads, clearing of ROW, conductor installation, and cleanup). However, all work would be within existing ROW and no new towers would be constructed. Some towers may need to be modified or reinforced to carry the additional weight of the new conductor. Specific towers requiring reinforcement would be determined following detailed design of the Project. Tower reinforcement would not alter the general design or the location of the structures. This process would generally include reinforced foundations or steel member replacements.

3.0 RECONDUCTORING

LADWP proposes the reconductoring of 76 miles of the existing BR-RIN 230 kV transmission line with larger conductors between the Barren Ridge Switching Station and Rinaldi Substation (towers 176-1 through 251-1). The existing conductors (954/ 2,312 kcmil) would be replaced with a new 1,433.6 kcmil “Merrimack” ACSS/TW/HS conductor. The new conductor would have a larger diameter that allows for greater electrical capacity.

The upgrade of the existing BR-RIN would also require many of the same activities of the new transmission line (surveying of ROW, rehabilitation of existing access and spur roads, clearing of ROW, conductor installation, and cleanup). Removal of the existing conductor would be used to string a pulling line, and this line would then be used to pull in the new conductor. All work would remain within the existing 250-foot-wide ROW, with no additional ROW required. Some of the towers would need to be

modified, replaced, and/or have foundations reinforced or replaced to carry the additional weight of the new heavier conductor.

4.0 NEW HASKELL CANYON SWITCHING STATION

As a component of the BRRTP, LADWP proposes the construction of a new switching station in Haskell Canyon, south of the Angeles National Forest on LADWP-owned property at the convergence of several existing and proposed 230 kV transmission lines (the existing BR-RIN, the proposed double-circuit Barren Ridge-Haskell Canyon, existing Castaic-Northridge, Castaic-Sylmar, Castaic-Olive, and the proposed Castaic to Haskell Canyon).

The station would be approximately 500 feet by 600 feet to accommodate the necessary circuit positions, which are made up of equipment, such as steel support structures, circuit breakers, disconnect switches, and associated equipment, and a relay house and control house containing control and protective relaying equipment. The relay and control houses would each be approximately 30 feet long by 12 feet wide by 10 feet high and constructed of gray concrete block. The station yard would include a paved internal access road approximately 16 feet wide and would be enclosed by chain-link fencing with barbed-wire extension for security. Figure 6 illustrates the preliminary design layout for the station. Figure 7 illustrates the preliminary grading plan for the station.

Necessary pre-construction geotechnical investigation on-site would include six borings by a drill rig to investigate bedrock and soil stability and four cone penetration test locations after site grading to determine friction resistance for piers. The cone penetration test rig would be a small truck with a hydraulic ram assembly mounted on the back, which is used to push a 2.5-inch diameter cone into the ground to a depth up to 50 feet. Existing roads would be used to access the site.

Construction of the new Haskell Canyon Switching Station would consist of preconstruction surveys, clearing and grading of access roads, site grading and drainage development, installation of concrete foundations and steel support structures, installation of below- and above-ground electrical conduits for equipment power and control, installation of below- and above-grade grounding conductors, and installation of control and relay houses. Equipment required for station construction would include graders and excavators, backhoes, drill rigs, water trucks, scrapers, sheep's foot compactors, front end loaders, concrete trucks, trucks, and flatbed trailers. Cranes, man-lifts, portable welding units, line trucks, and mechanic trucks would also be required. Construction would require an estimated 12 months with approximately 60 workers.

Site preparation work for the station would involve clearing and grading of access roads, clearing of the switchyard site, the cut and fill grading of the site, and placement and compaction of structural fill that would serve as a base for switching station facilities. The site would be graded to maintain current drainage patterns as much as possible. A 16-foot wide paved road and 100-foot by 100-foot gravel parking area would be required. The yard would be covered with crushed-rock aggregate. Native vegetation would be re-established where possible outside the switchyard fence.

Following site grading and development, reinforced concrete foundations would be installed to support the steel structures and electrical equipment and control facilities. It is estimated that 1,500 cubic yards of concrete would need to be delivered to the switching station site for the foundations. Foundation work would require approximately 180 trips to the site by 40-ton, 10-yard capacity concrete trucks over a 120-day working period. Subsequent to the foundation installation, trenches would be dug to facilitate placement of copper conductors for the station grounding mat.

Multiple transmission lines would be terminated into the switching station (i.e., the new and existing Barren Ridge – Haskell and Castaic – Haskell Canyon transmission lines) and would need support and

require the installation of galvanized steel structures. An existing 115 kV transmission line may need to be relocated around the proposed station. High-voltage bus work consisting of aluminum jumpers and tubing would be installed within the station.

FIGURE 6. HASKELL CANYON SWITCHING STATION DESIGN LAYOUT

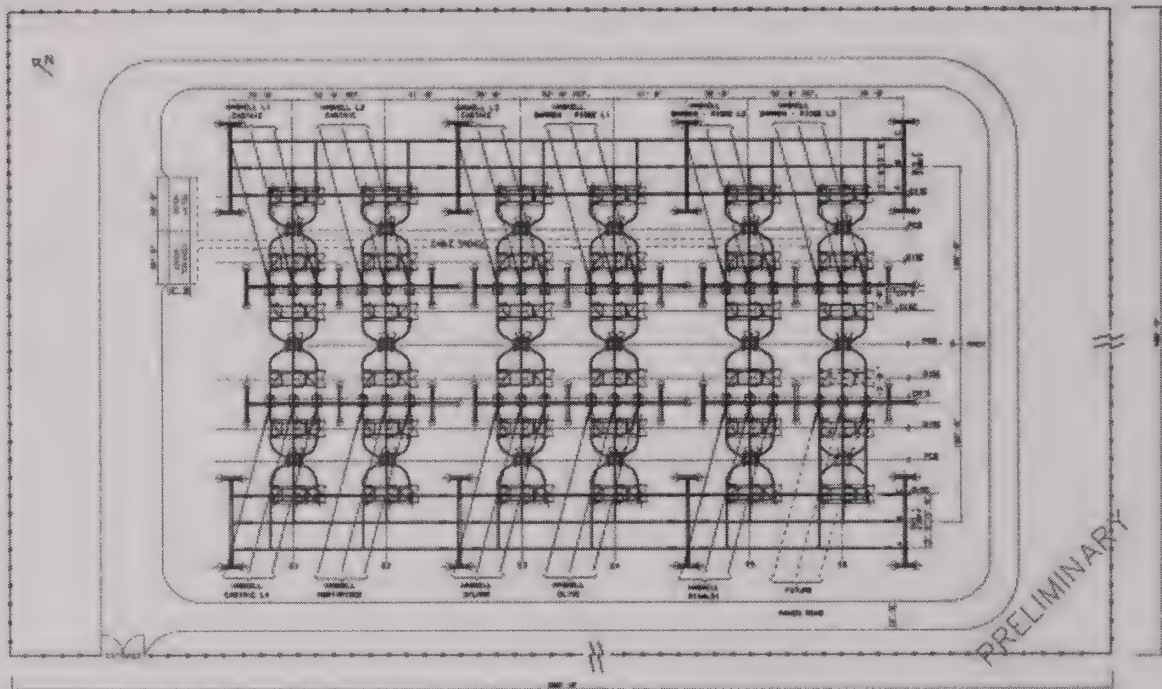
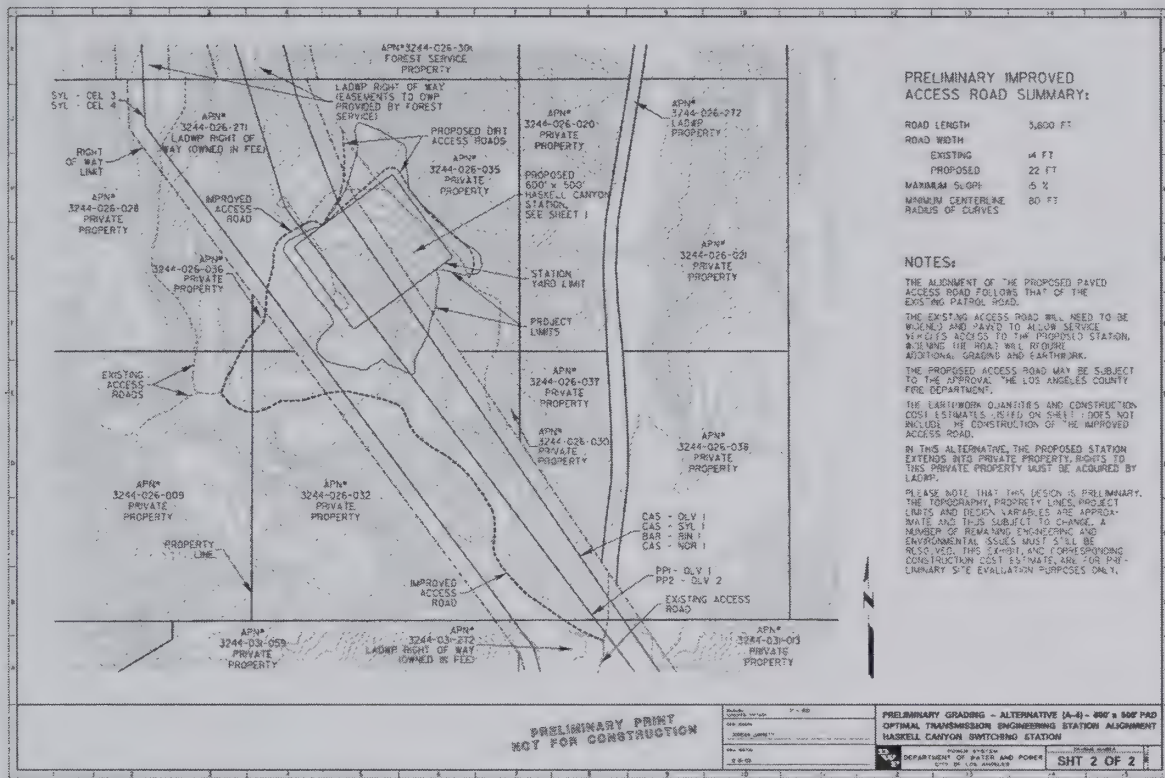


FIGURE 7. HASKELL CANYON GRADING PLAN



5.0 EXPANSION OF BARREN RIDGE SWITCHING STATION

LADWP proposes expansion of the existing Barren Ridge Switching Station to the east side by 235 feet by 500 feet, for a total station size of 485 feet by 500 feet (approximately 5.6 acres). The expansion area of the station would include electrical structures and equipment for the addition of transmission lines, a material staging area, roadway within the station, and drainage area. Figure 8 illustrates the preliminary design layout for the station.

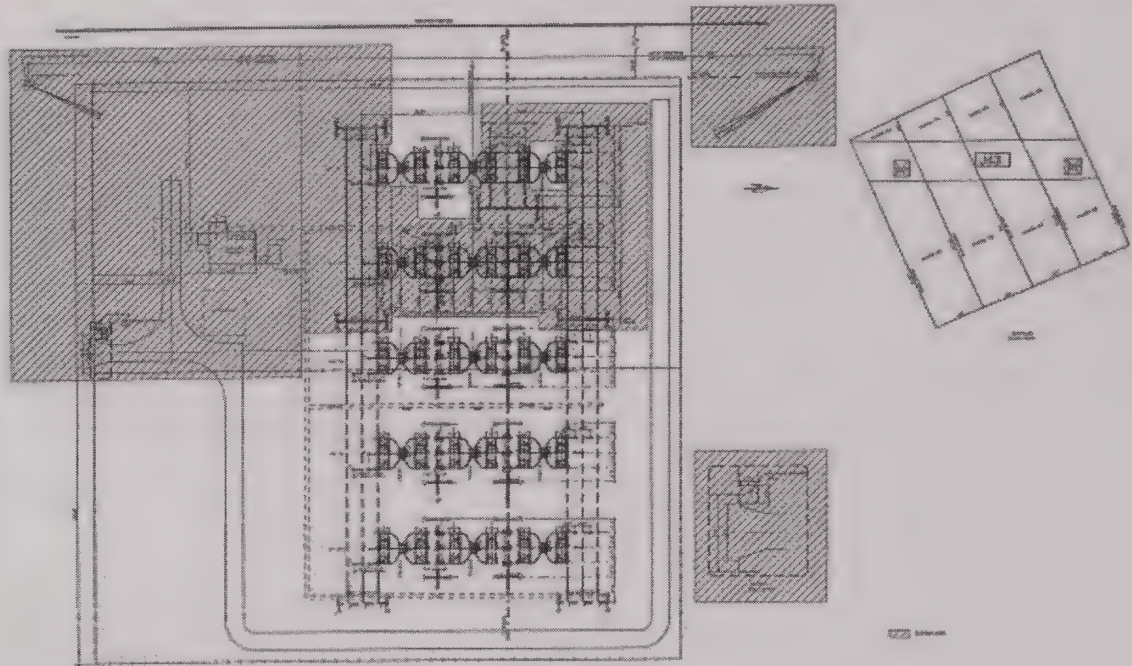
Expansion of the existing switching station would be very similar to the construction of the Haskell Canyon Switching Station as described above. Expansion would consist of preconstruction surveys, site preparation and grading, installation of reinforced concrete foundations, installation of electrical conduits for equipment power and control, and installation of structures and equipment.

Necessary pre-construction geotechnical on-site investigation would include two test pits excavated by a backhoe to investigate soil density and settlement, and four cone penetration test locations on-site to determine friction resistance for piers. The cone penetration test rig would be a small truck with a hydraulic ram assembly mounted on the back, which is used to push a 2.5-inch diameter cone into the ground to a depth up to 50 feet. Existing roads would be used to access the site.

It is estimated that 700 cubic yards of concrete would need to be delivered to the switching station site for the foundations. Foundation work would require approximately 80 trips to the site by 40-ton, 10-yard capacity concrete trucks over a 90-day working period. Equipment required for station construction would include graders and excavators, backhoes, drill rigs, water trucks, scrapers, sheep's foot compactors, front end loaders, concrete trucks, trucks and flatbed trailers. Cranes, man-lifts, portable welding units, line

trucks, and mechanic trucks would also be required. An estimated 8 months with approximately 60 workers would be required to expand the station.

FIGURE 8. BARREN RIDGE SWITCHING STATION EXPANSION LAYOUT



APPENDIX C: MANAGEMENT INDICATOR SPECIES REPORT

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July, 2011

CITY OF LOS ANGELES DEPARTMENT OF WATER AND POWER

Barren Ridge Renewable Transmission Project *Management Indicator Species Report*

PROJECT NUMBER:

116313

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1.0 INTRODUCTION

Management Indicator Species (MIS) are selected by the U.S. Department of Agriculture, Forest Service (Forest Service) because changes in their populations and abundance are believed to indicate the effects of forest management activities (36 CFR [Code of Federal Regulations] 219.19(a)(1), 1982) and the health of various specific ecosystems or habitats, and to aid in giving direction for future monitoring (36 CFR 219(a)(6), 1982). While regulation under the 1982 National Forest System Land and Resource Management Planning Rule (1982 Planning Rule) required the selection of vertebrate and/or invertebrate species as MIS, it did not exclude the selection of other, non-wildlife forms. Thus, vascular plants are included as MIS because these species are in turn often widespread and are also responsive to environmental stresses. Guidance regarding MIS set forth in the 2005 California National Forest Land Management Plan (LMP) directs Forest Service resource managers to (1) at project scale, analyze the effects of proposed projects on the habitats of each MIS affected by such projects, and (2) at the national forest (forest), monitor populations and/or habitat trends of forest MIS, as identified by the LMP.

The purpose of this assessment is to evaluate the potential impacts of the proposed Barren Ridge Renewable Transmission Project (BRRTP, Project) on the Management Indicator Species identified in the 2005 LMP (USFS 2005a, Part 1, page 46). The rationale for MIS selection is presented in Appendix B of the Forest Service Pacific Southwest Region Final Environmental Impact Statement (FEIS) for the LMP (USFS 2005b, Volume 2, pages 72 – 81).¹ The LMP direction is to maintain or improve habitat conditions to sustain healthy populations of MIS. This document will disclose effects associated with BRRTP to MIS habitat or individuals that could occur within the Project area.

1.1 DIRECTION REGARDING THE ANALYSIS OF PROJECT-LEVEL EFFECTS ON MIS

Project-level effects on MIS are analyzed and disclosed as part of environmental analysis under the National Environmental Policy Act (NEPA). This involves examining the impacts of the Proposed Action and alternatives on MIS habitat by discussing how direct, indirect, and cumulative effects would change the quantity and/or quality of habitat in the Project area. These Project-level impacts to habitat are then related to national forest-scale population and/or habitat trends. The appropriate approach for relating project-level impacts to broader scale trends depends on the terms in the LMP. Hence, where the Angeles National Forest (ANF) LMP requires population monitoring or population surveys for an MIS (USFS 2005a, Part 2, page 97), the project-level effects analysis for that MIS may include additional data that is available from population monitoring data. For certain MIS, the LMP does not require population monitoring or surveys; for these MIS, project-level MIS effects analysis can be informed by forest-scale habitat monitoring and analysis alone. The California LMP requirements for MIS analyzed within the ANF are summarized in Section 3 of this report.

The following steps are required to adequately analyze project effects to MIS, including Threatened, Endangered, and Sensitive (TES) species that are also MIS:

- Identifying which MIS have habitat that would be either directly or indirectly affected by the project alternatives; these MIS are potentially affected by the project.
- Identifying the LMP forest-level monitoring requirements for this subset of forest MIS.
- Analyzing project-level effects on habitats or habitat components for this subset of forest MIS.

¹ Although the FEIS is part of the LMP, because both the LMP and the FEIS are split into multiple sections, for ease of referring to specific text locations in this report, the LMP and FEIS will be referred to separately and cited as “USFS 2005a” and “USFS 2005b,” respectively. The LMP is split into three parts; Part 1 and Part 3 each refer to all four Southern California National Forests (Angeles, Cleveland, Los Padres, and San Bernardino). However, Part 2 is four separate documents, each referring to strategies for a separate forest. For the purposes of this document, any references to Part 2 of the LMP will be referring to the ANF Strategy specifically. The FEIS is split into two volumes which refer to all four Southern California National Forests.

- Discussing forest-scale habitat and/or population trends for this subset of forest MIS.
- Relating project-level impacts on MIS habitat to habitat and/or population trends for these MIS in the forest.

These steps are described in detail in the Pacific Southwest Region's draft document "MIS Analysis and Documentation in Project-Level NEPA, R5 Environmental Coordination" (USFS 2006). This MIS Report documents application of the above steps to select and analyze MIS for the BR RTP.

1.2 DIRECTION REGARDING MONITORING OF MIS POPULATION AND HABITAT TRENDS AT THE FOREST SCALE

Forest-scale monitoring requirements for the ANF MIS are found in the Monitoring Plan of the Forest Service FEIS (USFS 2005b, Volume 2, pages 72 – 81).

1.2.1 Habitat Status and Trends

The Forest LMP (USFS 2005a, Part 2, page 97) requires forest-scale monitoring of habitat status and trend for select MIS on the ANF. For MIS with habitat potentially affected by BR RTP, these habitat monitoring requirements are summarized in Table 1 and Table 2 of this report. Habitat status is considered the current amount of habitat for each MIS on ANF. Habitat trend is the direction of change in the amount of habitat between the time the Forest LMP was approved and the present. The methodology for assessing habitat status and trend is described in detail in the ANF MIS Report (USFS 2008).

Habitats are the vegetation types (e.g., mixed conifer forest) and/or ecosystem components (e.g., cliffs or lakes) and any special habitat elements (e.g., snags) required by an MIS for breeding, cover and/or feeding. Required habitat is identified using habitat relationships data or models. In the case of MIS that are also federally threatened or endangered, or Forest Service sensitive species that have been studied in detail, this information will be considered as part of the analysis. Detailed information on the habitat relationship for MIS on the ANF can be found in the ANF MIS Report (USFS 2008). MIS habitat trend is monitored using ecological and vegetation data for the ANF.

1.2.2 Population Status and Trend

Population monitoring requirements for the MIS of the California National Forests are identified in the Monitoring Information of the Forest Service FEIS (USFS 2005b, Volume 2, pages 77 – 78). This monitoring is intended to answer the question "Are trends in resource conditions indicating that habitat conditions for fish, wildlife and rare plants are in an upward trend?" Population status is the current condition of the MIS related to the type of monitoring data (population measure) required in the LMP for that MIS. Population trend is the direction of change in that population measure over time.

The LMP requires monitoring of population status and trend for select MIS on the ANF as shown in Table 2 (USFS 2005a, Part 2, page 97). There are many types of population data, and this document also identifies the type of population monitoring data required for each MIS. All population monitoring data are collected and/or compiled at the forest scale, consistent with the ANF LMP.

Population data for MIS are collected and consolidated by the ANF in cooperation with State and federal agency partners (including the California Department of Fish and Game [CDFG], U.S. Geological Survey [USGS], and U.S. Department of the Interior Fish and Wildlife Service [USFWS]) or conservation partners (including Partners in Flight and various avian joint ventures). Population data includes presence data, which is collected using population surveys, bird point counts, number of hunter kills, and counts of species sign (such as deer pellets). The ANF's MIS monitoring program for species typically hunted, fished, or trapped was designed to be implemented in cooperation with CDFG, consistent with direction in the 1982 Planning Rule to monitor forest-level MIS population trends in cooperation with State fish

and wildlife agencies to the extent practicable (36 CFR 219.19(a)(6)). To be biologically meaningful for wide-ranging MIS, presence data are collected and tracked not only at the forest scale, but also at larger scales, such as range-wide, State, province (Southern California), or important species management unit (e.g., Deer Assessment Unit or waterfowl migratory routes). Population data at various scales are important to both assess and provide meaningful context for population status and trend at the forest scale.

Where populations are monitored, the monitoring design will result in data that can provide conclusions at a broad landscape scale for the province. For the 12 Forest MIS, the Forest Service FEIS (USFS 2005b, Volume 2, pages 77 – 78) does not limit monitoring efforts to population monitoring, but instead allows for habitat monitoring and analysis. For the MIS with habitat potentially affected by BRRT, the population monitoring requirements are summarized in Table 1 and Table 2 of this report.

2.0 MIS SELECTED FOR PROJECT ANALYSIS

MIS for the ANF are identified in the Forest LMP (USFS 2005a, Part 1, page 46). The MIS analyzed for the proposed BRRT within the ANF were selected from this list of MIS identified in the LMP, as indicated below in Table 1. In addition, Table 1 identifies the management issue associated with the MIS, method of measurement, monitoring method, and whether or not the MIS is potentially affected by the Project according to its habitat and population status within the Project area.

TABLE 1. MANAGEMENT INDICATOR SPECIES FOR THE ANGELES NATIONAL FOREST AND RELEVANCE TO THE PROJECT

SPECIES AND ASSOCIATED HABITAT TYPE	MANAGEMENT ISSUE	METHOD OF MEASUREMENT	MONITORING METHOD	CATEGORY AND RELEVANCE TO PROJECT
Mule Deer (All habitat types)	Vegetation diversity and age class mosaics; roads and recreation effects	Trend in abundance and/or habitat condition	Herd composition in cooperation with CDFG; habitat condition	Category 3
Mountain Lion (All habitat types)	Landscape linkages; habitat fragmentation	Trend in distribution, movement, and/or habitat conditions	Studies in cooperation with CDFG, USGS	Category 3
Arroyo Toad (Aquatic and riparian habitats)	Ground disturbance including trampling and compaction; spread of invasive nonnative species; mortality from collision; altered stream flow regimes	Trends in abundance, distribution, and/or habitat conditions	Population abundance and/or habitat condition in selected locations	Category 3
Song Sparrow (Aquatic and riparian habitats)	Ground disturbance including trampling and compaction; spread of invasive nonnative species; mortality from collision; altered stream flow regimes	Trend in abundance and/or habitat condition	Riparian bird species point counts and/or habitat condition	Category 3
Blue Oak (Oak woodlands and savannas)	Oak regeneration	Trend in sapling abundance	FIA* data	Category 1
Valley Oak (Oak woodlands and savannas)	Oak regeneration	Trend in sapling abundance	FIA data	Category 1
Englemann oak (oak woodlands and savannas)	Oak regeneration	Trend in sapling abundance	FIA data	Category 1
Coulter pine (Chaparral and conifer ecotone)	Drought/beetle related mortality and lack of fire	Trend in age/size class distribution	FIA data/ aerial photo monitoring	Category 1

SPECIES AND ASSOCIATED HABITAT TYPE	MANAGEMENT ISSUE	METHOD OF MEASUREMENT	MONITORING METHOD	CATEGORY AND RELEVANCE TO PROJECT
Bigcone Douglas-fir (Chaparral and conifer ecotone)	Altered fire regimes (fire severity and/or fire return interval)	Trend in extent of vegetation type	FIA data/ aerial photo monitoring	Category 1
California spotted owl (Mixed conifer forests)	Altered fire regimes (fire severity and/or fire return interval)	Occupied territories and/or habitat condition	Forest Service Region 5 protocol	Category 3
Black oak (Mixed conifer forests)	Altered fire regimes (fire severity and/or fire return interval)	Trend in abundance, size class distribution	FIA data	Category 1
White Fir (Mixed conifer forests)	Altered fire regimes (fire severity and/or fire return interval)	Trend in size class distribution	FIA data	Category 1

*Forest Inventory and Analysis Program

Category 1: MIS whose habitat is not in or adjacent to the project area and would not be affected by the project.

Category 2: MIS whose habitat is in or adjacent to the project area, but would not be either directly or indirectly affected by the project.

Category 3: MIS whose habitat would be either directly or indirectly affected by the project.

The MIS whose habitat would be either directly or indirectly affected by the BRRTP, identified as Category 3 in Table 1, are carried forward in this analysis, which will evaluate the direct, indirect, and cumulative effects of the Proposed Action and alternatives on the habitat of these MIS. The MIS selected for Project-level MIS analysis for the BRRTP are: mule deer, mountain lion, arroyo toad, song sparrow, and California spotted owl. All other MIS are considered Category 1 and will not be discussed further in this analysis due to a lack of suitable habitat or occurrences within the Project area, indicating that they will not be impacted by the construction of the BRRTP. These MIS are: blue oak, valley oak, Englemann oak, Coulter pine, bigcone Douglas fir, black oak, and white fir.

3.0 MONITORING REQUIREMENTS FOR MIS SELECTED FOR PROJECT-LEVEL ANALYSIS

The Forest Service FEIS (USFS 2005b, Volume 2, pgs 72 – 81) identifies forest-scale habitat and population monitoring requirements for the ANF MIS. This information is also displayed in Table 1. Habitat and population monitoring results for the ANF MIS are described in the ANF MIS Report (USFS 2008) and are summarized in Table 2 below for the MIS that could be affected by the BRRTP.

3.1 HOW MIS MONITORING REQUIREMENTS ARE BEING MET

For the MIS selected for Project-level analysis, a summary of how the required habitat and/or population monitoring is being achieved by the Forest Service follows. A more detailed description is included in the ANF MIS Report (USFS 2008).

TABLE 2. FOREST-SCALE HABITAT AND POPULATION MONITORING FOR SELECTED MIS

SPECIES	METHOD OF HABITAT AND POPULATION MONITORING
Mule Deer	Trends in mule deer populations are monitored in cooperation with the CDFG as part of their ongoing surveys. Information gathered for Deer Assessment Unit (DAU)-7 and Deer Zone D-11 are used to determine trends in deer populations on the ANF.
Mountain Lion	Trends in mountain lion populations are monitored in cooperation with the CDFG. Information gathered by CDFG is used to determine trends in mountain lion populations on the ANF.
Arroyo Toad	Trends in arroyo toad abundance, distribution, and/or habitat conditions are determined by monitoring population abundance and/or habitat condition in selected locations.
Song Sparrow	Summaries of Breeding Bird Survey (BBS) data are used to identify trends for Southern California. Results of riparian bird count surveys are also used to identify trends at the Forest level.

SPECIES	METHOD OF HABITAT AND POPULATION MONITORING
California Spotted Owl	Forest Service Region 5 and CDFG monitoring protocols are used to locate, evaluate, and monitor California spotted owl occupied territories and/or suitable habitat condition.

Mule Deer. Consistent with LMP direction dictating MIS monitoring (USFS 2005a, Part 2, page 97), mule deer population status and trend are tracked and monitored in cooperation with the CDFG, the agency responsible for deer herd management within the State of California (USFS 2005b, Volume 1, pages 124 – 125). The ANF works closely with CDFG to periodically review deer population status on the forest. Population distribution monitoring for mule deer is conducted at a variety of scales: (1) statewide, hunting zone, and herd population monitoring is managed by CDFG using a variety of methods; (2) forest-level presence data are collected through tracking actual sightings of deer and through documenting signs of deer occupancy, including pellet groups (scat), tracks, antlers, tree rubs, and beds.

Mountain Lion. Consistent with LMP direction dictating MIS monitoring (USFS 2005a, Part 2, page 97), mountain lion population status and trend are tracked and monitored in cooperation with the CDFG, the agency responsible for management of the mountain lion population in California. The ANF works closely with CDFG to periodically review mountain lion population status on the forest.

Arroyo Toad. In the ANF, there are three known active populations encompassing an estimated 4,000 acres of occupied habitat (USFWS 2009). Arroyo toads occur along Castaic Creek; along Big Tujunga Creek, including associated lower reaches of Mill and Alder Creeks; and on the desert side of the San Gabriel Mountains in Little Rock Creek (USFS 2008). A fourth population has historically been known to occur along Arroyo Seco, but it is believed that this population has since been extirpated (USFWS 2009). While annual surveys are conducted at the three known occupied locations, there are no estimates of what actual population sizes are on the ANF (USFS 2008). Arroyo toad protocol surveys were conducted within appropriate habitat from 2008 – 2010 for the BRRTP, but no arroyo toads were identified within the Project area (POWER 2010a). Furthermore, no new populations besides those mentioned above have been discovered on the ANF (USFS 2008).

Song Sparrow. Riparian bird count surveys were conducted on the ANF from 1988 – 1997. These surveys provided information regarding past trends and baseline information for song sparrow populations that can be used for comparison with future riparian bird count survey results. Riparian bird count surveys on the ANF and the three other Southern California National Forests will continue to provide a means for identifying trends in song sparrow populations. The riparian bird count surveys provide excellent, standardized data to track status and trend (changes) in the distribution of riparian associated species, such as the song sparrow, at biologically meaningful scales. The riparian bird count surveys, which span the four Southern California National Forests, provide meaningful and scientifically sound data that fulfills the requirements for monitoring song sparrow population trends.

California Spotted Owl. Forest Service Region 5 and CDFG protocol surveys are conducted on the ANF to monitor and evaluate California spotted owls and their population growth. While surveys have occurred infrequently over the last 20 years, they occurred annually from 2005 – 2008 (USFS 2008, Table 16). The results of these surveys can be used to guide management where trends are seen over several years. Protocol surveys were conducted from 2008 – 2010 within the BRRTP vicinity, but no California spotted owls were located (POWER 2010b).

4.0 PROPOSED ACTION

The City of Los Angeles Department of Water and Power (LADWP) is proposing the Barren Ridge Renewable Transmission Project (BRRTP or Project) to access clean, renewable resources in the Tehachapi Mountain and Mojave Desert areas, and to improve reliability and upgrade transmission

capacity. The Project is located in Kern and Los Angeles counties. As shown in Figure 1, the proposed BR RTP would include the following:

- 1) Construction of approximately 61 miles of a new 230 kilovolt (kV) double-circuit transmission line from the LADWP Barren Ridge Switching Station to Haskell Canyon;
- 2) Addition of approximately 12 miles of a new 230 kV circuit on the existing double-circuit structures from Haskell Canyon to the Castaic Power Plant;
- 3) Reconductoring of approximately 76 miles of the existing Barren Ridge-Rinaldi (BR-RIN) 230 kV transmission line with larger capacity conductors between the Barren Ridge Switching Station and the Rinaldi Substation;
- 4) Construction of a new switching station in Haskell Canyon;
- 5) Expansion of the existing Barren Ridge Switching Station.

FIGURE 1. PROPOSED ACTION AND ALTERNATIVES



BARREN RIDGE RENEWABLE TRANSMISSION PROJECT



4.1 PROJECT COMPONENT DESCRIPTIONS

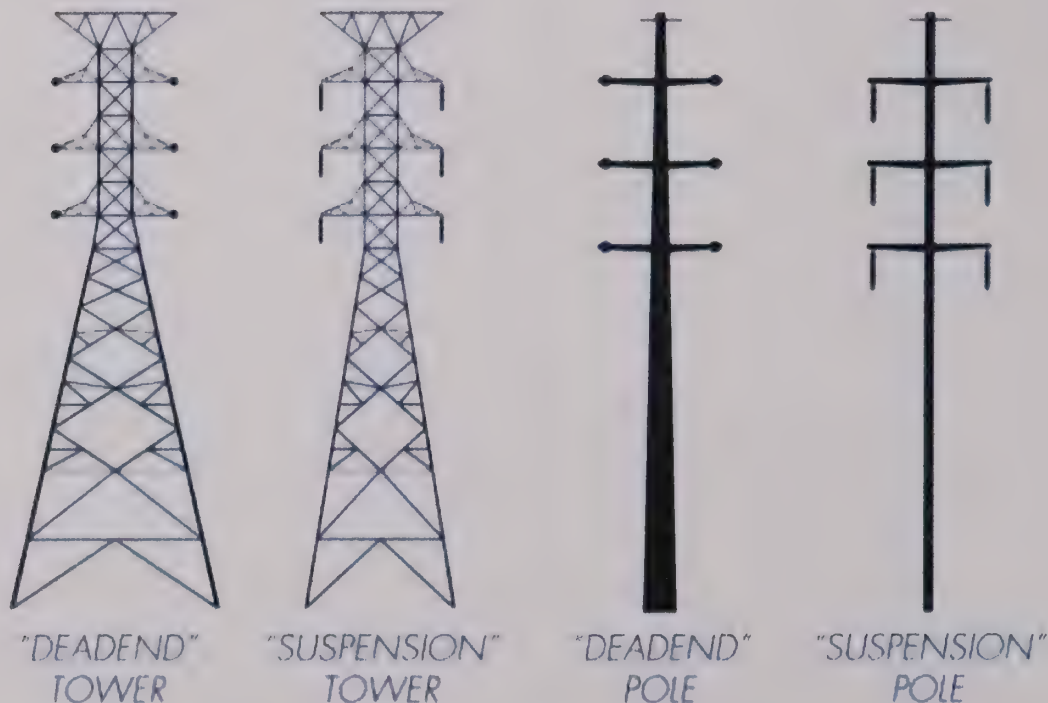
4.1.1 Component 1 - Construction of New 230 kV Double-Circuit Transmission Line

The proposed double-circuit 230 kV transmission line component of the BR RTP would consist of two alternating current (AC) circuits from the Barren Ridge Switching Station to the proposed Haskell Canyon Switching Station in Haskell Canyon.

The proposed structures for the new transmission line would primarily be self-supporting double-circuit steel lattice towers fabricated from galvanized steel members, as shown on the left side of Figure 2. Depending on the environmental conditions of the surrounding terrain, the height of the proposed lattice structures would range from 110 to 195 feet, with an average tower-to-tower span of 1,000 to 1,100 feet. Appendix F of the Biological Assessment lists the structure specifications for the number of structures per mile, average span length, and average heights for towers and components. Exact structure placement would be determined during engineering surveys and detailed design studies for the selected Alternative route following the Record of Decision (ROD) on the EIS/EIR. A variety of engineering, constructability, existing access, and environmental issues would be considered during detailed structure siting within the permitted right-of-way (ROW).

“Dead-end” towers of self-supporting, steel-lattice design would be required periodically to add longitudinal strength along the line. Dead-end towers would also be used at turn (angle) locations along the line, at heavily loaded tower locations, and at specific utility crossings (e.g., other transmission lines) for added safety. Dead-ended towers are of the same basic configuration as suspension towers (non-angle structures), the difference being in the tower “arms,” insulator systems, and tower weights.

FIGURE 2. TYPES OF TOWERS

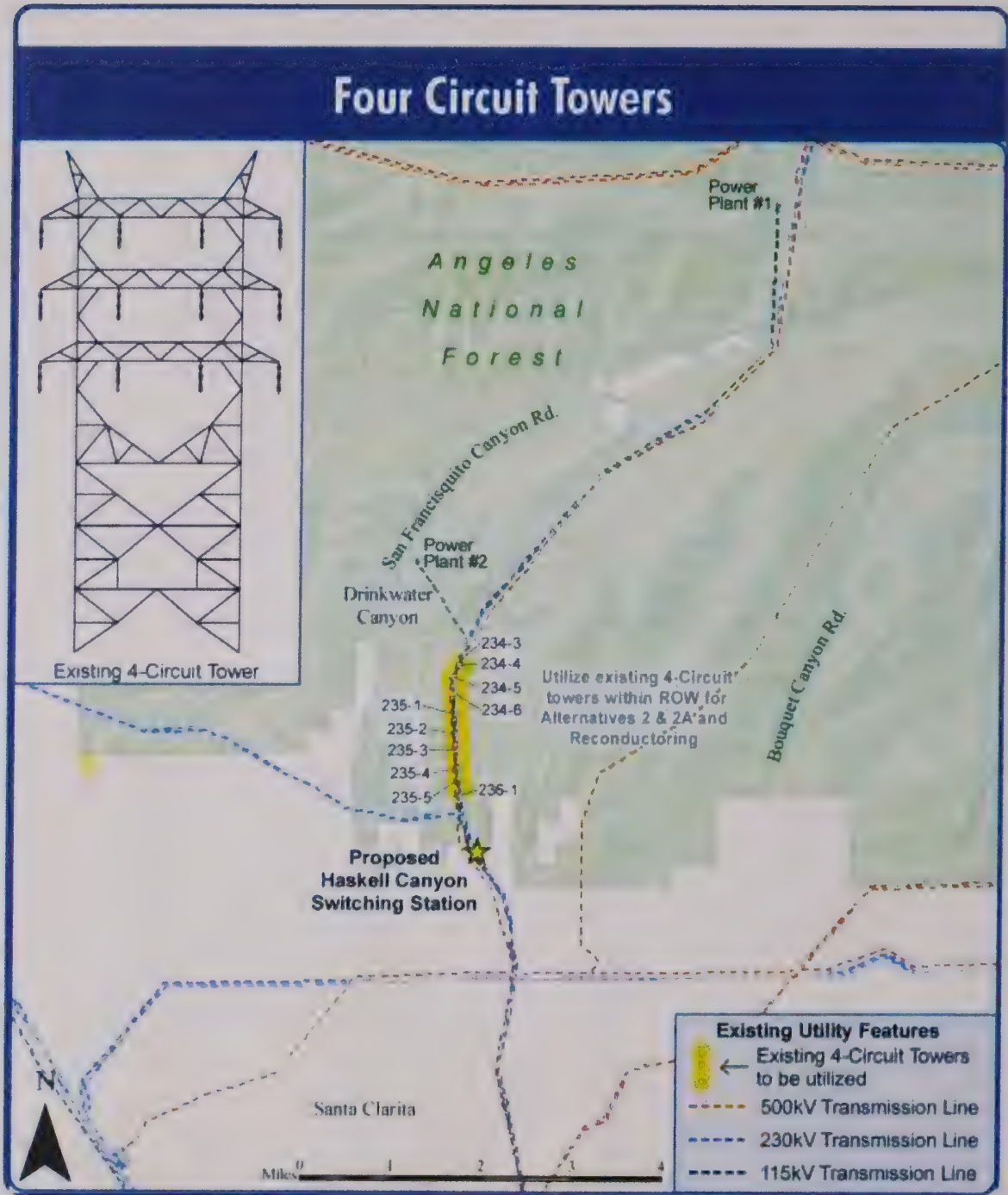


Self-supporting, tubular steel poles (TSP) have been proposed by LADWP as an available mitigation structure where appropriate to reduce potential impacts, such as conflicts with cultivation on agricultural lands. The TSPs can reduce impacts in some cases due to a smaller footprint than the proposed self-

supporting steel lattice structures; however, more TSPs per mile are necessary due to a shorter average span between structures. The TSPs would have an average height range between 95 and 180 feet, depending on the conditions of the surrounding terrain, with an average tower-to-tower span of 700 to 800 feet. Refer to Figure 2 for an illustration of the double-circuit poles.

For the majority of the alignment, the two new 230 kV circuits would be placed on new double-circuit transmission towers, but for approximately 1.5 miles, the circuits would be placed on existing four-circuit structures that are located just north of the proposed Haskell Canyon Switching Station. Between where the existing BR-RIN crosses Dry Canyon to the intersection of the Castaic transmission lines, LADWP has existing four-circuit towers with three vacant positions. The existing towers would be utilized in this section for the proposed 230 kV double circuit transmission line instead of constructing new towers. See Figure 3 for the location and illustration of the existing four-circuit towers to be utilized.

FIGURE 3. FOUR-CIRCUIT TOWERS TO BE UTILIZED



BARREN RIDGE RENEWABLE TRANSMISSION PROJECT



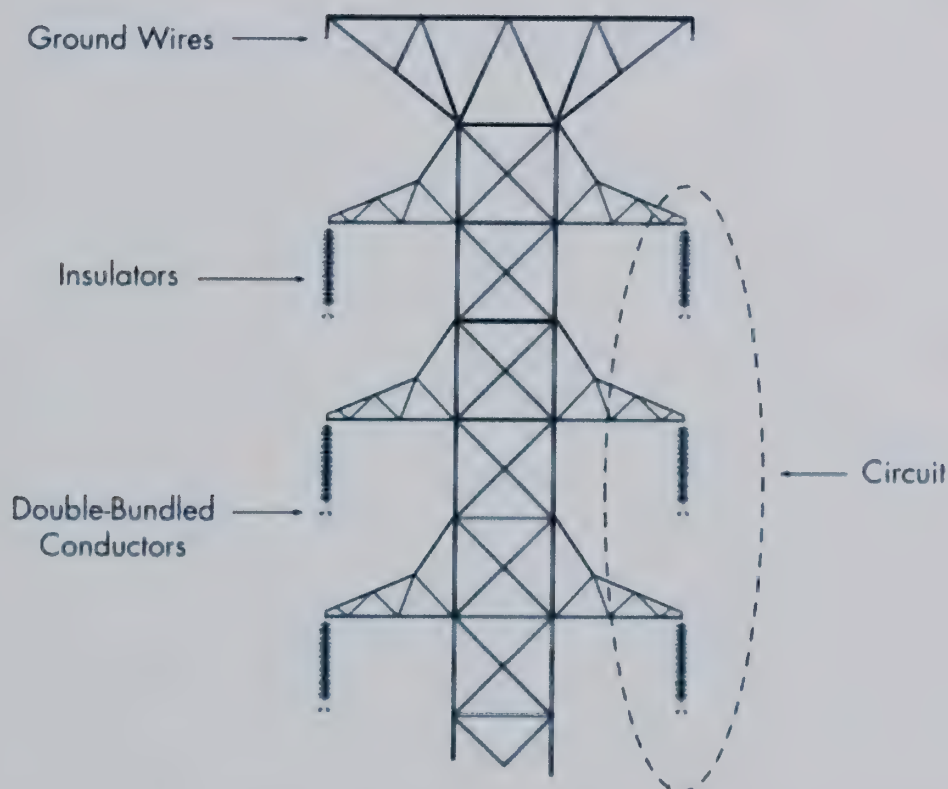
POWER
ENGINEERS



The self-supporting steel lattice structures and TSPs would utilize concrete foundations. Steel lattice structures would require four footings (one for each leg); TSPs would require single footings. Footings would be steel-reinforced concrete pier type and be cast in place. The typical design for the concrete footings for lattice structures would be between 2.5 and 5.0 feet in diameter, with an average depth of 20 feet depending on soil conditions. Typical design for single foundations for TSPs would include augured holes approximately five to seven feet in diameter and 15 to 30 feet deep, depending on conditions. Formwork steel reinforcing would be assembled in the hole prior to casting concrete in place. Reinforcing steel would become integral to the lower leg of the steel lattice structure during assembly. An above-ground concrete form placed over each hole would result in a final concrete foundation height of 0.5 to 2.0 feet above ground level.

As illustrated in Figure 4, Typical Tower Components, each tower carries conductors ("wires"), insulators, and ground wires. The conductor being considered for the new double-circuit 230 kV transmission line and installation of the Castaic – Haskell Canyon #4 circuit on existing structures is a bundled 715.5 kcmil "Starling" ACSS/AW. The reconductoring of the BR-RIN transmission line between Barren Ridge Switching Station and Rinaldi Substation would require a bundled 1,433.6 kcmil "Merrimack" ACSS/TW/HS conductor.

FIGURE 4. TYPICAL TOWER COMPONENTS



Each circuit would consist of three phases ("wires") as illustrated in Figure 4. To increase the current-carrying capability of the transmission lines and reduce power loss, the Proposed Action (Alternative 2) would utilize bundled conductors installed for each phase. The bundled conductors would consist of two conductor cables connected by a spacer. The new 230 kV double-circuit transmission line would consist of a total of six double-bundled (12 individual) wires.

Minimum conductor height above the ground, under normal operation of the line, is 30 feet. Greater clearances may be required in certain areas to allow for clearances over trees or other vegetation that

could pose a risk to the operation of the transmission line. Minimum conductor clearance would dictate the exact height of each tower based on topography and safety clearance requirements.

Insulators are used to provide the physical connection of conductors to structures. These system components are made of very low conducting materials (polymer insulators) that inhibit the flow of electric current from energized conductors to ground or to other energized system elements. Insulators and their associated hardware are to be configured in an "I" assembly to support conductors while maintaining required distances between phases and grounded structures. Each "I" string would consist of six-inch diameter insulators between six and eight feet long.

To shield conductors from hazard of direct lightning strikes by transferring lightning currents into the ground, overhead ground wires (shield wires) or fiber optic ground wire would be installed on top of new structures.

Construction of a transmission line involves the following general sequence of events: surveying activities; identifying and constructing access roads; clearing ROW and tower sites (including construction yards and batch plants); installing foundations; assembling and installing the towers; clearing, pulling, tensioning, and splicing; installing ground wires and conductors; installing counterpoise; switching station tie-in; and site upkeep and site reclamation. Various phases of construction would occur at different locations throughout the construction process for the BRRTP. This would require several contractors operating at the same time and in different locations. Refer to Appendix F of the Biological Assessment for a description of each construction activity.

Existing paved and unpaved highways and roads would be used where possible. Roads along existing utility corridors would also be used where possible to minimize new access road construction. In locations where existing roads could be used, that are located in close proximity to the proposed or existing ROW centerlines, only new spur roads to the tower sites would be constructed. The specific locations and design of all new access and spur roads would be determined during final Project design.

It is anticipated that one or two construction yards or staging areas would be required for materials storage, construction equipment, construction vehicles, and temporary construction offices. Staging areas would be approximately five acres in size, and located centrally or near each end of the transmission line route. The staging areas would likely be located on previously disturbed land and would be level and surfaced with crushed aggregate base. The LADWP would negotiate with landowners for specific locations of the staging areas.

Three-Circuit Tower Mitigation

In areas where there are ROW expansion constraints and where LADWP has existing 230 kV transmission lines, LADWP is proposing to construct three-circuit towers within the existing ROW to carry the existing BR-RIN circuit and the two proposed Barren Ridge to Haskell Canyon (BR-HC) circuits. This would avoid various impacts, including the acquisition of residential property in the unincorporated communities of Willow Springs (milepost 27.1 to 27.6), Elizabeth Lake, and Green Valley (milepost 44.6 to 51.7). Refer to Figure 5 for an illustration of three-circuit tower types, and to Figure 6, the Three-Circuit Tower Mitigation Map, for proposed locations.

FIGURE 5. THREE-CIRCUIT TOWER TYPES

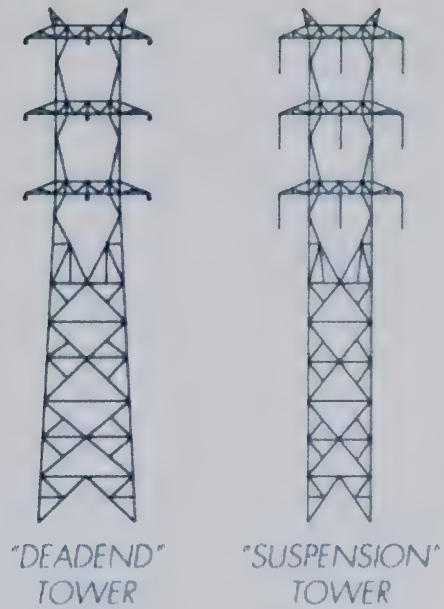


FIGURE 6. THREE-CIRCUIT TOWER MITIGATION



BARREN RIDGE RENEWABLE TRANSMISSION PROJECT



LADWP must maintain the electrical service along the existing BR-RIN transmission line to avoid impacts to the hydroelectric power plants north of the Barren Ridge Switching Station. Therefore, a temporary transmission line would be constructed to keep the BR-RIN circuit energized during construction of the three-circuit towers. After the temporary line is constructed, the existing BR-RIN single-circuit towers would be removed to allow the new three-circuit towers to be constructed within the existing ROW. Once construction of the three-circuit towers is completed, the temporary transmission line would be removed.

The temporary transmission line would be 7.5 miles long and would consist of wood and steel single poles with an average height of 95 feet, a 3-foot by 3-foot footprint, and an average of eight poles per mile. Construction would occur within a new temporary 80- to 100-foot ROW. The majority of the temporary transmission line would be constructed along San Francisquito Road. Portions would also be constructed along Elizabeth Lake Road and Johnson Road. Pole placement would be adjacent to public roadways wherever possible. If necessary, temporary ROW on private property would be needed where poles could not be placed within public road ROW. The majority of poles would be direct-embedded when set in place and would not require a permanent foundation. Where additional strength is necessary at larger angle points, steel poles would be required, which could require an excavation approximately 6 feet in diameter by 20 feet deep to accommodate the concrete pier foundation that would be cast in place. Once all the poles have been constructed and the conductor installed, the existing BR-RIN circuit would be connected into the temporary line and energized. The construction would require establishment of a staging area, work areas around poles, and pull and tension sites. Access to pole sites and pull and tension sites would be from the adjacent roadways.

Approximately seven miles of the existing BR-RIN single-circuit towers would be removed, with existing ROW utilized to access the existing towers. The new three-circuit towers would be placed within the existing ROW, utilizing existing access roads. Helicopter Mitigation, as described in this section below, would be applied in steeper terrain if additional access is required. The new three-circuit tower would require a 25-foot by 30-foot structure footprint and an average of seven structures per mile; the average structure height would be 170 feet, with a maximum tower-to-tower span length of 780 feet. The construction process for the new three-circuit towers would be the same as the double-circuit towers discussed above. After completion of construction of the three-circuit towers, the temporary transmission line would be removed and all temporary staging and work area land disturbances would be restored as close to previous conditions as possible and revegetated as required.

Helicopter Mitigation

Within the ANF where the terrain is steep and access is limited, the Forest Service would require that the new double-circuit 230 kV structures be constructed with the use of helicopters (such as the Hughes 500 or Bell 212, or Sikorsky Skycrane). Although no specific locations for this mitigation have been identified for the Proposed Action, as defined, it is expected that the Forest Service would require the helicopter mitigation for construction in any area more than 300 feet from an existing road and with slopes greater than approximately 25 percent. The use of helicopters for the construction of transmission tower structures would eliminate the need for new access roads to structure locations, and would therefore minimize land disturbance associated with crane pads, structure laydown areas, and the trucks and tractors used for delivery of structures to sites. However, the following site and ground disturbing construction activities would be required to construct the new transmission line within the identified helicopter construction areas: portable landing pads, helicopter fly yards/staging areas and associated access roads, tower structure vegetation clearing, guard structures at major crossings, and access road pullouts.

Temporary 24-foot wide access roads would be required to access the helicopter fly yards/staging areas. The transmission line materials (tower steel, conductor reels, structure hardware, etc.) would be delivered by truck to the helicopter fly yards/staging areas. Vegetation clearing may be required at these sites to ensure safe working conditions. The fly yards/staging areas would serve as helicopter support yards for

fueling and maintenance, as well as for the transport of materials and personnel. Towers may also be assembled in sections at these yards prior to delivery to the tower sites. Heavy lift helicopters would then fly the towers from the yards to the tower sites.

Portable landing pads would be located at each tower site. These pads would allow helicopters to load and unload personnel, tools, and equipment necessary for construction of foundations and assembly of tower structures. Helicopter-constructed towers that would not be in close proximity to existing access roads would utilize micropile foundations. For each tower leg, micropile foundations would use a group of three to eight 6- to 9-inch diameter casings that would be drilled and grouted into the ground. The exposed portion of the pile group would be encased in a reinforced concrete cap from the top of the casings to a depth anywhere from one to eight feet below the ground surface, depending on the terrain.

Conductor installation would proceed in the same manner as the double-circuit tower installation. The equipment necessary for conductor installation would be large, heavy construction equipment that could only be brought in by truck. Some NFS roads could need maintenance or improvement to allow pulling and tensioning, but no new access or spur roads would be created for conductor installation on the helicopter-constructed towers. After project completion, any maintained access roads to helicopter fly yards/staging areas would be reduced to 16 feet.

4.1.2 Component 2 - Addition of New 230 kV Circuit

Between the proposed Haskell Canyon Switching Station and the existing Castaic Power Plant, LADWP proposes the addition of 12 miles of a new 230 kV transmission circuit onto existing Castaic – Olive 230 kV Transmission Line structures. The circuit would cross the unincorporated communities of Castaic and Saugus and the city of Santa Clarita. A total of 300 feet of U.S. Department of the Interior, Bureau of Land Management (BLM)-managed public lands and four miles of NFS lands would be traversed; however, the new circuit would not require a new or additional ROW. This new circuit would be called Castaic – Haskell Canyon #4 and would utilize the same conductor (bundled 715.5 kcmil “Starling” ACSS/AW [aluminum conductor steel supported/aluminum-clad steel wire]) as that proposed for the new 230 kV transmission line between Barren Ridge and Haskell Canyon Switching Stations.

The addition of a new circuit on existing towers would require many of the same construction activities associated with a new transmission line (refer to Appendix F of the Biological Assessment for a description of each construction activity). However, all work would be within existing ROW and no new towers would be constructed. Some towers may need to be modified or reinforced to carry the additional weight of the new conductor. Specific towers requiring reinforcement would be determined following detailed design of the Project. Tower reinforcement would not alter the general design or the location of the structures. This process would generally include reinforced foundations or steel member replacements. Refer to Figure 1 for a map showing the location of the new 230 kV circuit.

4.1.3 Component 3 - Reconductoring of Existing Transmission Line

LADWP proposes the reconductoring of 76 miles of the existing BR-RIN 230 kV transmission line with larger conductors from the Barren Ridge Switching Station to Rinaldi Substation. Four miles of BLM-managed public lands, 13 miles of National Forest System (NFS) lands, and 44 miles of private property would be traversed. The existing conductors (954/ 2,312 kcmil) would be replaced with a new 1,433.6 kcmil “Merrimack” ACSS/TW/HS (aluminum conductor steel supported/trapezoidal wires/high strength) conductor. The new conductor would have a larger diameter that allows for greater electrical capacity.

The upgrade of the existing BR-RIN would also require many of the same activities of the new transmission line (surveying of right-of-way [ROW], rehabilitation of existing access and spur roads, clearing of ROW, conductor installation, and cleanup). Removal of the existing conductor would be used to string a pulling line, and this line would then be used to pull in the new conductor. All work would remain within the existing 250-foot-wide ROW, with no additional ROW required. Some of the towers

would need to be modified, replaced, and/or have foundations reinforced or replaced to carry the additional weight of the new heavier conductor. Refer to Figure 1 for the location of the reconductoring.

4.1.4 Component 4 - Construction of New Switching Station

As a component of the BRRTP, LADWP proposes the construction of a new switching station in Haskell Canyon, south of the Angeles National Forest on LADWP-owned property at the convergence of several existing and proposed 230 kV transmission lines (the existing BR-RIN, the proposed double-circuit Barren Ridge – Haskell Canyon, existing Castaic – Northridge, Castaic – Sylmar, Castaic – Olive, and the proposed Castaic – Haskell Canyon). Refer to Figure 1 for the location of the new switching station.

The station would be approximately 500 feet by 600 feet to accommodate the necessary circuit positions, which are made up of equipment, such as steel support structures, circuit breakers, disconnect switches, and associated equipment, and a relay house and control house containing control and protective relaying equipment. The relay and control houses would each be approximately 30 feet long by 12 feet wide by 10 feet high and constructed of gray concrete block. The station yard would include a paved internal access road approximately 16 feet wide and would be enclosed by chain-link fencing with barbed-wire extension for security. The preliminary grading plan for the station is located in Appendix F of the Biological Assessment.

Necessary pre-construction geotechnical investigation on-site would include six borings by a drill rig to investigate bedrock and soil stability and four cone penetration test locations after site grading to determine friction resistance for piers. The cone penetration test rig would be a small truck with a hydraulic ram assembly mounted on the back, which is used to push a 2.5-inch diameter cone into the ground to a depth up to 50 feet. Existing roads would be used to access the site.

Construction of the new Haskell Canyon Switching Station would consist of preconstruction surveys, clearing and grading of access roads, site grading and drainage development, installation of concrete foundations and steel support structures, installation of below- and above-ground electrical conduits for equipment power and control, installation of below- and above-grade grounding conductors, and installation of control and relay houses. Equipment required for station construction would include graders and excavators, backhoes, drill rigs, water trucks, scrapers, sheep's foot compactors, front end loaders, concrete trucks, trucks, and flatbed trailers. Cranes, man-lifts, portable welding units, line trucks, and mechanic trucks would also be required. Construction would require an estimated 12 months with approximately 60 workers.

Site preparation work for the station would involve clearing and grading of access roads, clearing of the switchyard site, the cut and fill grading of the site, and placement and compaction of structural fill that would serve as a base for switching station facilities. The site would be graded to maintain current drainage patterns as much as possible. A 16-foot-wide paved road and a 100-foot by 100-foot gravel parking area would be required. The yard would be covered with crushed-rock aggregate. Native vegetation would be re-established where possible outside the switchyard fence.

Following site grading and development, reinforced concrete foundations would be installed to support the steel structures and electrical equipment and control facilities. It is estimated that 1,500 cubic yards of concrete would need to be delivered to the switching station site for the foundations. Foundation work would require approximately 180 trips to the site by 40-ton, 10-yard capacity concrete trucks over a 120-day working period. Subsequent to the foundation installation, trenches would be dug to facilitate placement of copper conductors for the station grounding mat.

Multiple transmission lines would be terminated into the switching station (i.e., the new and existing Barren Ridge – Haskell and Castaic – Haskell Canyon transmission lines) and would need support and require the installation of galvanized steel structures. An existing 115 kV transmission line may need to

be relocated around the proposed station. High-voltage bus work consisting of aluminum jumpers and tubing would be installed within the station.

4.1.5 Component 5 - Expansion of Existing Switching Station

LADWP proposes expansion of the existing Barren Ridge Switching Station to the east side by 235 feet by 500 feet, for a total station size of 485 feet by 500 feet (approximately 5.6 acres). The expansion area of the station would include electrical structures and equipment for the addition of transmission lines, a material staging area, roadway within the station, and a drainage area. The preliminary design layout for the station may be found in Appendix F of the Biological Assessment. Refer to Figure 1 for the location of the existing switching station.

Expansion of the existing switching station would be very similar to the construction of the Haskell Canyon Switching Station as described above. Expansion would consist of preconstruction surveys, site preparation and grading, installation of reinforced concrete foundations, installation of electrical conduits for equipment power and control, and installation of structures and equipment.

Necessary pre-construction geotechnical on-site investigation would include two test pits excavated by a backhoe to investigate soil density and settlement, and four cone penetration test locations on-site to determine friction resistance for piers. The cone penetration test rig would be a small truck with a hydraulic ram assembly mounted on the back, which is used to push a 2.5-inch diameter cone into the ground to a depth up to 50 feet. Existing roads would be used to access the site.

It is estimated that 700 cubic yards of concrete would need to be delivered to the switching station site for the foundations. Foundation work would require approximately 80 trips to the site by 40-ton, 10-yard capacity concrete trucks over a 90-day working period. Equipment required for station construction would include graders and excavators, backhoes, drill rigs, water trucks, scrapers, sheep's foot compactors, front end loaders, concrete trucks, trucks, and flatbed trailers. Cranes, man-lifts, portable-welding units, line trucks, and mechanic trucks would also be required. An estimated eight months with approximately 60 workers would be required to expand the station.

4.1.6 Project-Wide Mitigation Measures

To address potential impacts of the Proposed Project to multiple resource areas as discussed above, the following project-wide mitigation measure would be applied:

Three-Circuit Tower Mitigation (THREE-CIRCUIT) – A three-circuit lattice tower design would be implemented as described in Section 4.1.1 of this report, at the locations shown in Figure 6, Three-Circuit Tower Mitigation Map.

Helicopter Mitigation (HELICOPTER) – Helicopter Mitigation shall be implemented, as described in Section 4.1.1 of this report, in steep areas of the ANF where access is limited. For Alternatives 1 and 2a, implementation would occur at the locations shown on Figure 9, Identified Helicopter Mitigation Map. During final design of the Project, areas other than those shown on Figure 9, including Alternatives 2 and 3, may potentially require helicopter construction of the towers. This determination would generally be made where tower sites have no existing access roads within 300 feet and slopes are greater than 25 percent. Final identification of these tower sites would be determined and agreed upon by the Forest Service, BLM and LADWP.

4.1.7 Construction Monitoring

An approved compliance program would be developed to address mitigation requirements associated with the avoidance of sensitive plant and animal species, cultural sites, or other sensitive features located

within or adjacent to the Project. Resource protection measures proposed by LADWP for this Project are described in Section 4.4. These measures will be included in the POD.

TABLE 3. ESTIMATED TEMPORARY DISTURBANCE OF VEGETATION COMMUNITIES WITHIN THE BRRTP

Vegetation Community	Total Acreage	Temporary Minimum Disturbance (Ac)	Temporary Maximum Disturbance (Ac)	Permanent Minimum Disturbance (Ac)	Permanent Maximum Disturbance (Ac)	Percentage of Total Habitat Permanently impacted in each jurisdiction
Alternative 1						
Chamise Chaparral	488.38	50.87	56.06	9.98	16.73	3.43%
Riversidian Sage Scrub	100.74	9.74	10.48	1.84	3.06	3.04%
Southern Coast Live Oak Riparian Forest	3.59	0.38	0.38	0.05	0.05	1.35%
Southern Cottonwood Willow Riparian Forest	8.04	0.86	0.86	0.23	0.42	5.28%
Southern Mixed Chaparral	349.92	40.80	45.81	8.36	14.13	4.04%
Southern Sycamore Alder Riparian Woodland	2.38	0.25	0.25	0.07	0.13	5.28%
Southern Willow Scrub	12.91	1.11	1.30	0.19	0.32	2.48%
Alternative 2 – LADWP's Proposed Action and Federal Agency Preferred Alternative						
Chamise Chaparral	344.45	38.61	39.38	6.9	10.11	2.9%
Disturbed/developed	231.75	24.86	24.86	4.84	7.80	3.4%
Riversidian Sage Scrub	82.47	8.85	8.85	1.37	1.84	2.2%
Southern Coast Live Oak Riparian Forest	20.33	3.01	3.40	0.56	0.69	3.4%
Southern Mixed Chaparral	81.79	8.77	8.77	1.89	3.24	4.0%
Southern Riparian Scrub	6.19	0.66	0.66	0.17	0.33	5.3%
Southern Sycamore Alder Riparian Woodland	20.32	2.18	2.18	0.50	0.50	2.5%
Alternative 2a						
Canyon Live Oak Forest*	-	-	-	-	-	-
Chamise Chaparral	344.44	38.61	39.38	6.90	10.11	2.94%
Disturbed/developed	119.26	12.45	12.72	2.15	3.24	2.72%
Interior Live Oak Chaparral	53.92	5.18	5.60	1.14	2.06	3.83%
Riversidian Sage Scrub	82.47	8.85	8.85	1.37	1.84	2.23%
Scrub Oak Chaparral	30.05	3.12	3.19	0.78	1.46	4.85%
Southern Coast Live Oak Riparian Forest	20.33	3.01	3.40	0.56	0.69	3.39%
Southern Mixed Chaparral	268.16	25.39	27.88	5.17	9.03	3.37%
Southern Riparian Scrub	6.19	0.66	0.66	0.17	0.33	5.28%
Southern Sycamore Alder Riparian Woodland	15.32	1.64	1.64	0.43	0.81	5.27%
Alternative 3						
Disturbed/developed	19.45	2.12	2.13	0.56	1.04	5.35%
Riversidian Sage Scrub	140.94	24.72	28.19	5.81	9.57	6.79%
Scrub Oak Chaparral	54.36	5.83	5.83	1.52	2.87	5.28%
Southern Riparian Scrub	6.47	0.69	0.69	0.18	0.34	5.28%
Reconductoring						
Chamise Chaparral	304.26	32.65	32.65	8.54	16.07	5.3%
Disturbed/developed	235.69	25.28	25.28	4.86	7.77	3.3%
Riversidian Sage Scrub	85.68	10.30	10.30	2.69	5.07	5.9%
Southern Coast Live Oak Riparian Forest	61.53	6.60	6.60	1.73	3.25	5.3%

Vegetation Community	Total Acreage	Temporary Minimum Disturbance (Ac)	Temporary Maximum Disturbance (Ac)	Permanent Minimum Disturbance (Ac)	Permanent Maximum Disturbance (Ac)	Percentage of Total Habitat Permanently Impacted in each jurisdiction
Southern Mixed Chaparral	74.74	8.01	8.01	1.69	2.87	3.8%
Southern Riparian Scrub	6.17	0.66	0.66	0.17	0.33	5.3%
Southern Sycamore Alder Riparian Woodland	19.61	2.34	2.34	0.54	0.95	4.8%
New 230 kV Circuit						
Chamise Chaparral	139.37	21.06	23.05	4.73	8.03	5.8%
Riversidian Sage Scrub	55.49	5.96	5.96	1.20	1.98	3.6%
Southern Coast Live Oak Riparian Forest	6.11	0.66	0.66	0.08	0.08	1.3%
Southern Cottonwood Willow Riparian Forest	7.49	0.80	0.80	0.21	0.40	5.3%
Southern Sycamore Alder Riparian Woodland	1.78	0.19	0.19	0.05	0.09	5.1%

*Note: Although Canyon Live Oak Forest was identified as a vegetation community present on Alternative 2a during 2010 BRRT botanical surveys, it is not one of the communities listed in the Gap Analysis Program (GAP) data for this area (POWER 2010c). Because vegetation community mapping was not conducted during the botanical surveys, the exact area and corresponding impact acreages for Canyon Live Oak Forest were not calculated. Acreage numbers for other habitat types listed on Alternative 2a thus may be smaller than those listed in the table above, which is based only on GAP data. This will not change the total acreage of Alternative 2a or any references to habitat for mule deer and mountain lion, which are habitat generalists that occur in all habitat types within the Project area (USFS 2005b, Volume 2, page 77). However, references to suitable habitat acreages for California spotted owl, which is a more specialized species that could occur in Canyon Live Oak Forest, will refer to total suitable habitat on Alternative 2a as being all suitable habitat in the GAP data above excluding Canyon Live Oak Forest.

4.2 OPERATION AND MAINTENANCE ACTIVITIES

Regular inspection and maintenance of overhead facilities is crucial for maintaining uniform, adequate, safe and reliable service. For detailed operation and maintenance activities, please see Appendix F of the Biological Assessment.

4.3 LAND MANAGEMENT PLAN STANDARDS

The following Standards are taken from Part 3 of the LMP and are applicable to impacts to plants and wildlife as described below for the BRRT (USFS 2005a, Part 3, pages 3 – 13).

- **S6:** Seed to be used on National Forest System lands will be certified to be free of noxious weeds. Where available, only locally collected native seed will be used, or seeds will be used from species that are noninvasive and nonpersistent. When available, wattles, mulch and livestock feed to be used on National Forest System lands will be certified to be free of noxious weeds.
- **S7:** There are extensive areas within and adjacent to the national forests of Southern California meeting the definition of Wildland/Urban Interface (WUI) as described in the Healthy Forests Restoration Act of 2003. WUI (as defined by the Act) is a variable width up to 1.5 miles from communities at risk or as defined in individual community fire protection plans. This forest plan further identifies a direct protection buffer (WUI Defense Zone) and an indirect protection buffer (WUI Threat Zone) that fall within the broader definition WUI. A WUI Defense Zone is the area directly adjoining structures and evacuation routes that is converted to a less-flammable state to increase defensible space and firefighter safety. The WUI Threat Zone is an additional strip of vegetation modified to reduce flame heights and radiant heat. The Threat Zone generally extends approximately 1.25 miles out from the Defense Zone boundary. Yet, actual extents of Threat Zones are based on fire history, local fuel conditions, weather, topography, existing and proposed fuel treatments, and natural barriers to fire and community protection plans, and therefore could extend well beyond the 1.25 mile. The two zones together are designed to make most structures more defensible.

- **S8:** Community protection needs within the WUI Defense Zone take precedence over the requirements of other forest plan direction, including other standards identified in Part 3 of the forest plan. If expansion beyond the 300-foot minimum width of the defense zone is needed due to site-specific conditions, projects will be designed to mitigate effects to other resources to the extent possible.
- **S11:** When occupied or suitable habitat for a threatened, endangered, proposed, candidate or sensitive (TEPCS) species is present on an ongoing or proposed project site, consider species guidance documents (see [LMP Part 3] Appendix H [pages 71 – 75]) to develop project-specific or activity-specific design criteria. This guidance is intended to provide a range of possible conservation measures that may be selectively applied during site-specific planning to avoid, minimize or mitigate negative long-term effects on threatened, endangered, proposed, candidate or sensitive species and habitat. Involve appropriate resource specialists in the identification of relevant design criteria. Include review of species guidance documents in fire suppression or other emergency actions when and to the extent practicable.
- **S12:** When implementing new projects in areas that provide for threatened, endangered, proposed, and candidate species, use design criteria and conservation practices (see [LMP Part 3] Appendix H [pages 71 – 75]) so that discretionary uses and facilities promote the conservation and recovery of these species and their habitats. Accept short-term impacts where long-term effects would provide a net benefit for the species and its habitat where needed to achieve multiple-use objectives.
- **S13:** Manage Critical Biological land use zones so that activities and discretionary uses are either neutral or beneficial for the species and habitats for which the area was established. Accept short-term adverse impacts to threatened, endangered, and proposed species if such impacts will be compensated by the accrual of long-term benefits to habitat for threatened, endangered, and candidate species.
- **S15:** Within riparian conservation areas retain snags and downed logs unless they are identified as a threat to life, property, or sustainability of the riparian conservation area.
- **S17:** In areas outside of Wildland/Urban Interface Defense Zones and fuelbreaks, retain soft snags and acorn storage trees unless they are a safety hazard, fire threat, or impediment operability.
- **S18:** Protect known active and inactive raptor nest areas. Extent of protection will be based on proposed management activities, human activities existing at the onset of nesting initiation, species, topography, vegetative cover, and other factors. When appropriate, a no-disturbance buffer around active nest sites will be required from nest-site selection to fledging.
- **S19:** Protect all spotted owl territories identified in the Statewide California Department of Fish and Game database (numbered owl sites) and new sites that meet the state criteria by maintaining or enhancing habitat conditions over the long-term to the greatest extent practicable while protecting life and property. Use management guidelines in the species conservation strategy (or subsequent species guidance document; see [LMP Part 3] Appendix H [pages 71 – 75]) to further evaluate protection needs for projects, uses and activities.
- **S20:** Maintain a limited operating period (LOP) prohibiting activities within approximately .25 miles of a California spotted owl nest site, or activity center where nest site is unknown, during the breeding season (February 1 through August 15), unless surveys confirm that the owls are not nesting. Follow the USDA Forest Service (1993, 1994 or subsequent) protocol to determine whether owls are nesting. The LOP does not apply to existing road and trail use and maintenance, use of existing developed recreation sites, or existing special-uses, such as recreation residence tracts. When evaluating the need to implement a limited operating period, site- and project-specific factors need to be considered (use species management strategy or subsequent guidance; see [LMP Part 3] Appendix H [pages 71 – 75]).
- **S21:** California spotted owl habitat that is lost to development for a compelling reason should be mitigated up to a two-to-one basis considering quality of habitat lost, number of territories affected, reproductive history of pair(s) displaced, location, and related factors. Development

includes ski area creation or expansion, new roads or trails, special-use sites and corridors, new recreation or administrative facilities, land exchanges, etc. Mitigation land should be sought first within the mountain range where the impacts occur; if this is not possible, mitigation land should be acquired within the San Gabriel or San Bernardino Mountains.

- **S22:** Except where it may adversely affect threatened and endangered species, linear structures such as fences, major highways, utility corridors, bridge upgrades or replacements, and canals will be designed and built to allow for fish and wildlife movement.
- **S24:** Mitigate impacts of on-going uses and management activities on threatened, endangered, proposed, and candidate species.
- **S25:** Conduct road and trail maintenance activities during the season of year that would have the least impact on threatened, endangered, and proposed wildlife species in occupied habitats, except as provided by site-specific consultation.
- **S27:** Use seasonal closures as specified by site-specific analysis to protect occupied bald eagle wintering, breeding, or nesting habitat.
- **S28:** Avoid or minimize disturbance to breeding and roosting California condors by prohibiting or restricting management activities and human uses within 1.5 miles of active California condor nest sites and within 0.5 miles of active roosts. Refer to California condor species account (or subsequent species guidance document; see [LMP Part 3] Appendix H [pages 71 – 75]) for additional guidance.
- **S31:** Design new facilities or expansion of existing facilities to direct public use away from occupied habitat for threatened, endangered, proposed and candidate species.
- **S32:** When surveys for species presence/absence are done for threatened, endangered, and proposed species, use established survey protocols, where such protocols exist.
- **S33:** Manage Special Interest Areas so that activities and discretionary uses are either neutral or beneficial for the resource values for which the area was established. Accept short-term adverse impacts to these resource values if such impacts will be compensated by the accrual of long-term benefit.
- **S37:** Design and manage fuel treatments to minimize the risk that treated areas will be used by unauthorized motorized and mechanized vehicles. Mitigate impacts where such use does occur.
- **S42:** Include provisions for raptor safety when issuing permits for new power lines and communication sites (see guidelines in [LMP Part 3] Appendix G). Also implement these guidelines for existing permits within one year in identified high-use flyways of the California condor, and within five years in other high-use raptor flyways. Coordinate with California Department of Fish and Game, U.S. Fish & Wildlife Service, and power agencies to identify the high-use flyways.
- **S47:** When designing new projects in riparian areas, apply the Five-Step Project Screening Process for Riparian Conservation Areas as described in [LMP Part 3] Appendix E - Five-Step Project Screening Process for Riparian Conservation Areas.
- **S49:** Require fish passage instream flows associated with dams and impoundments where fish passage will enhance or restore native or selected nonnative fish distribution and not cause adverse effects to other native species.

4.4 GENERAL PRACTICES AND MITIGATION MEASURES

The following tables describe proposed General Practices (GPs) and mitigation measures to reduce the impact of effects that may be generated by construction of the BRRTP. These were written in collaboration with ANF staff and apply to preconstruction, construction, and post-construction aspects of the Project. The GPs were written for all resources of the Project. Because not all of these are applicable to biology, ones that do not apply to biology have been removed and show “*not applicable*” in the table below. The entire list can be viewed in the BRRTP Draft Environmental Impact Statement/Environmental Impact Report (DEIS/EIR) (USFS, BLM, and LADWP 2011).

The mitigation measures are specific to biology and are in response to various impacts that could occur to vegetation, wildlife, and/or habitat. Impacts BIO-9 (The Project could potentially affect wildlife movement corridors and disturb wildlife movement), BIO-10 (The proposed Project may result in edge-associated impacts), and BIO-12 (Indirect impacts to wildlife species) do not have respective mitigation measures.

TABLE 4. GENERAL PRACTICES

GP #	DESCRIPTION
PLANS	
GP-1	Plan of Development & Construction, Operation and Maintenance Plans. In consultation with the Forest Service and BLM Authorizing Officers prior to construction, LADWP shall develop a COM Plan with the Forest Service and POD with BLM. These plans shall be attached to and become a part of the Special Use and Right-of-Way Authorizations. The COM Plan and POD shall include, at a minimum, road maintenance specifications, vegetation treatment and rehabilitation specifications, and conditions on maintenance and replacement of improvements. The agencies may combine the POD and COM plans into a single document for the Project.
GP-2	<i>Not applicable</i>
GP-3	<p>Hazardous Materials/Waste Management Plan. A Project-specific hazardous materials management and hazardous waste management program will be developed prior to initiation of the Project. The program will outline proper hazardous materials use, storage and disposal requirements as well as hazardous waste management procedures. The program will identify types of hazardous materials to be used during the Project and the types of wastes that will be generated. All Project personnel will be provided with Project-specific training. This program will be developed to ensure that all hazardous materials and wastes are handled in a safe and environmentally sound manner. Hazardous wastes will be handled and disposed of according to applicable rules and regulations. Employees handling wastes will receive hazardous materials training and shall be trained in hazardous waste procedures, spill contingencies, waste minimization procedures and Treatment, Storage and Disposal Facility (TSDF) training in accordance with Occupational Safety and Health Administration (OSHA) Hazard Communication Standard and 22 CCR. If degraded soil or groundwater is encountered during excavation (e.g., there is an obvious sheen, odor, or unnatural color to the soil or groundwater), it shall be excavated, tested, and disposed of in accordance with state hazardous waste disposal requirements.</p> <p>The Plan shall also include procedures detailing emergency responses to releases of hazardous materials. It will prescribe hazardous materials handling procedures for reducing the potential for a spill during construction, and will include an emergency response program to ensure quick and safe cleanup of accidental spills. All hazardous materials spills or threatened release, including petroleum products such as gasoline, diesel, and hydraulic fluid, regardless of the quantity spilled, will be immediately reported to the appropriate agency as outlined in the Plan if the spill has entered a navigable water, stream, lake, wetland, or storm drain, if the spill impacted any sensitive area including conservation areas and wildlife preserves, or if the spill caused injury to a person or threatens injury to public health. All construction personnel, including environmental monitors, will be aware of State and federal emergency response reporting guidelines.</p>
GP-4	<i>Not applicable</i>
GP-5	Stormwater Pollution Prevention Plan. A Project-specific Construction Stormwater Pollution Prevention Plan (SWPPP) will be prepared and implemented prior to the start of construction. The SWPPP will utilize Best Management Practices (BMPs) to address the storage and handling of hazardous materials and sediment runoff during construction activities.
GP-6	Spill Prevention, Countermeasure, and Control Plan. LADWP will prepare or update existing Spill Prevention, Countermeasure, and Control Plan (SPCC Plan) for proposed and/or expanded switching stations if necessary or required by Environmental Protection Agency (EPA) guidelines. The plans will include engineered and operational methods for preventing, containing, and controlling potential fluid releases, and provisions for quick and safe cleanup.

GP #	DESCRIPTION
GP-7	Soil Management Plan. A Soil Management Plan will be developed and implemented for construction of the proposed Project. The objective of the Soil Management Plan is to provide guidance for the proper handling, onsite management, and disposal of impacted soil that might be encountered during construction activities. The plan will include practices that are consistent with California Title 8, Occupational Safety and Health Administration (Cal-OSHA) regulations, as well as appropriate remediation standards that are protective of the planned use. The Plan will provide guidelines for identification of impacted soil, assessing impacted soil, soil excavation, impacted soil storage, verification sampling, and impacted soil characterization and disposal. In the event that potentially contaminated soils are encountered within the footprint of construction, soils will be tested and stockpiled. The appropriate Certified Unified Program Agency (CUPA) will determine whether further assessment is warranted.
GP-8	Avian Protection Plan. An Avian Protection Plan (APP) shall be developed and implemented for the construction and operation of the Project. The APP will outline measures and protocols that will be undertaken to protect avian species and is intended to protect local and migratory bird species that may occur within the Project area.
DESIGN	
GP-9	<i>Not applicable</i>
GP-10	<i>Not applicable</i>
GP-11	Structures will be placed so as to avoid sensitive features including, but not limited to, riparian areas, water courses, and cultural sites, and/or to allow conductors to clearly span the features, within limits of standard tower design. This will minimize the amount of sensitive features disturbed and/or reduce visual contrast.
GP-12	Drainage control features will be installed, as appropriate, to minimize the amount of stormwater flow from areas of active construction. Details would be described in the SWPPP.
CONSTRUCTION VEHICLES/EQUIPMENT	
GP-13	<i>Not applicable</i>
GP-14	<i>Not applicable</i>
GP-15	All trucks hauling soils or other loose materials shall be covered, or maintain at least two feet of freeboard (distance between the material and the top of the truck).
GP-16	Where visible soil material is carried onto adjacent public streets, the affected streets shall be cleaned daily with water sweepers.
GP-17	All vehicles and equipment operating within 100 feet of an active stream will be inspected daily to ensure they are free of any leaks of fuel, cooling, or lubricating fluids.
GP-18	All construction vehicles shall maintain a hazardous materials spill kit, which shall include absorbent materials, tarps, small storage containers or waterproof bags, and latex gloves. Field personnel shall be made aware of these kits and instructed on how to use them.
GP-19	Refueling, or addition or changing of oil and other fluids for equipment and heavy machinery shall be performed only at approved staging and construction yards. Staging and construction yards will be located on upland sites and spill containment measures will be used to minimize risk of spill drainage into waterways. Oil and other fluids will be disposed of as required by California law. Emergency refueling, or emergency addition or changing of oil or other fluids shall not be performed within 500 feet of natural stream channels or wetlands.
GP-20	Helicopters utilized for construction will be refueled at helicopter staging areas or local airports. Procedures will include the use of drop cloths made of plastic and drip pans and trays to be placed under refueling areas to ensure that chemicals do not come into contact with the ground. Refueling areas will be located in designated areas where absorbent pads and trays are available.
GP-21	LADWP shall contact ANF dispatch seven days prior to helicopter use and shall provide ANF with radio frequencies being used by the aircraft, aircraft identifiers, the number of helicopters that will be used while working on NFS lands at any given time, and the flight pattern of helicopters used on NFS lands. If a wildfire occurs in the Project area, upon contact from the Forest Aviation Officer, helicopters in use by LADWP shall immediately cease construction activities and not restart aerial operations until the Forest Aviation Officer provides clearance.
GP-22	The Applicant shall clear brush and dead and decaying vegetation that would pose a fire hazard from the work area prior to starting construction and/or maintenance work. The work area includes the transmission ROW, construction laydown areas, pull sites, access roads, parking pads, and any other sites adjacent to the ROW where personnel are active or where equipment is in use or stored. Cleared vegetation shall either be removed or chipped and spread onsite in piles no higher than six inches.

GP #	DESCRIPTION
ACCESS ROADS	
GP-23	The alignment of any new access roads or overland routes shall follow the designated area's landform contours where possible, providing that such alignment does not additionally impact resource values.
GP-24	To the extent practical, any re-grading of access roads shall be the minimum necessary to provide safe access of construction equipment, and erosion control measures.
GP-25	Construction vehicles shall use paved roads to access the construction site when available.
GP-26	<i>Not applicable</i>
GP-27	<i>Not applicable</i>
GP-28	<i>Not applicable</i>
GP-29	<i>Not applicable</i>
GP-30	<i>Not applicable</i>
GP-31	<i>Not applicable</i>
GP-32	<i>Not applicable</i>
GP-33	In areas where soils and vegetation are particularly sensitive to disturbance, existing access roads would be repaired only in areas where they are otherwise impassable or unsafe.
CONSTRUCTION AREAS	
GP-34	Construction activities shall be limited to the designated ROW and approved access and work areas as identified in the ROD and POD. Any deviations from the approved areas must be cleared with the jurisdictional agency and/or landowner.
GP-35	Grading areas shall be clearly marked and no equipment or vehicles shall disturb slopes or drainages outside of the grading area.
GP-36	No paint or permanent discoloring agents will be applied to rocks or vegetation to indicate survey or construction activity limits.
GP-37	<i>Not applicable</i>
GP-38	Soil excavated from construction activities shall not be left at work areas where the slopes exceed ten percent or where the work area is within 100 feet of a natural stream or waterbody (receiving water). In these situations, loose soil shall be used elsewhere within the immediate area or stockpiled at the staging area. Stockpiled soil shall be managed as required by the SWPPP. No stockpiling or spreading of soil or other materials shall occur within stream channels.
GP-39	During grading or excavation work for the Project, the contractor shall observe the exposed soil for visual evidence of contamination. If visual contamination indicators are observed during construction, the contractor shall stop work until the material is properly characterized and appropriate measures are taken to protect human health and the environment. The contractor shall document the exact location of the contamination and shall immediately notify a designated Environmental Monitor and propose actions for addressing the contamination in accordance with the Soil Management Plan.
GP-40	<i>Not applicable</i>
GP-41	Allow natural vegetation to reoccur on temporarily disturbed areas following the completion of construction.
GP-42	Weed control measures on non-federal lands shall be implemented as determined in consultation with CDFG, the Forest Service, and the Counties of Los Angeles and Kern Agricultural Commissions.
GP-43	Every effort will be made to minimize vegetation removal and permanent loss at construction sites. Native vegetation will be flagged for protection or stockpiled for recontouring use at the discretion of the Biological Monitor and the Construction Supervisor.
GP-44	In construction areas where recontouring is not required, vegetation will be left in place wherever possible and the original contour will be maintained to avoid excessive root damage and allow for resprouting. Disturbance will be limited to overland driving where feasible to minimize changes in the original contours.
GP-45	Use of heavy equipment within a flowing channel will be avoided if possible; however, should it be necessary for heavy equipment to be used within a flowing channel, the Environmental Monitor will be notified prior to initiation of construction activities to allow adequate time for site visits and surveys, if necessary.
GP-46	Asphalt or cement equipment will not be rinsed in, nor excess products deposited into, any stream or other waterway. Asphalt or concrete effluent will not be allowed to enter into streams or RCAs. Effluent will be removed from standing water and prevented from entering a waterway.
GP-47	Fill material, including brush, loose soils, and other similar debris, will not be deposited within a stream channel or on a stream bank.

GP #	DESCRIPTION
SURVEYS/MONITORING	
GP-48	Biological Monitor. For areas identified as environmentally sensitive, such as streams, wetlands, riparian areas, and other environmentally sensitive areas, a biological monitor shall be present during ground disturbing construction activities. The qualified biologist shall conduct monitoring for any area subject to disturbance from construction activities that may impact biological resources. The biological monitor's duties include minimizing impacts to special-status species, native vegetation, wildlife habitat, and unique resources, as well as to identify potential issues or impacts to biological resources and report those to the authorized biologist. Where appropriate, the monitor will flag the boundaries of biologically sensitive areas and monitor any construction activities in these areas to ensure that ground disturbance activities and impacts occur within designated limits.
GP-49	Worker Environmental Awareness Program. A Worker Environmental Awareness Program (WEAP) will be implemented to educate all construction personnel of the area's environmental conditions and the environmental protection measures that must be adhered to. An environmental training program will be established to communicate environmental concerns and appropriate work practices, including spill prevention, emergency response measures, protection of biological and cultural resources, and proper Best Management Practice (BMP) implementation, to all construction and maintenance personnel.
COORDINATION/PERMITS	
GP-50	Prior to construction, LADWP shall consult with all federal, State, and local agencies, including local agency consortiums, having jurisdiction over lands affected by the proposed Project's ROW and ancillary facilities to ensure that no permanent restrictions or preclusions of their land management practices occur.
GP-51	<i>Not applicable</i>
GP-52	<i>Not applicable</i>
GP-53	Incorporate riparian area avoidance and permit measures. The following actions and all permit conditions detailed within the Nationwide 12 permit and Regional Water Quality Control Board (RWQCB) 401 water quality certification (subject to separate approval) would be implemented by the construction manager and environmental compliance monitor(s). Before construction, qualified resource specialists would stake and flag or fence exclusion zones around all identified riparian woodlands. Such exclusion zones would include a ten-foot buffer to preclude sediment intrusion into the riparian areas. Earth-moving activities would be restricted from these zones, although essential vehicle operation and foot travel would be permitted on existing roads, bridges, and crossings. All other construction activities, vehicle operation, material and equipment storage, and other surface-disturbing activities would be prohibited within the exclusion zone. In areas where riparian habitats are unavoidable, the construction manager, in consultation with the lead environmental compliance inspector, would narrow the width of the centerline to the maximum extent allowable. New spur roads and existing access road improvements would be constructed and implemented using methodology that preserves existing hydrology. Tower pad clearance would be minimized to the maximum extent allowable. All temporarily disturbed riparian areas that would not be utilized for future routine operation and maintenance activities would be restored to ensure no net loss of habitat functions and values. Following construction activities, the areas would be restored as soon as practicable.
GP-54	Construction crews will avoid impacting the streambeds and banks of any streams along the route to the extent feasible. When construction or maintenance work affects the bed, bank or margins of a stream under CDFG jurisdiction, LADWP will notify CDFG as required under Fish and Game Code Section 1602, which may include securing a Streambed Alteration Agreement.
GP-55	<i>Not applicable</i>
GP-56	LADWP would obtain appropriate Tree Removal Permits when necessary from the appropriate government agencies. In accordance with the obtained permits, LADWP shall avoid or minimize impacts to protected trees.
GP-57	<i>Not applicable</i>
GP-58	<i>Not applicable</i>
GP-59	<i>Not applicable</i>

TABLE 5. PROPOSED BR RTP MITIGATION MEASURES

BIO-1	<p><i>Provide restoration/compensation for impacted sensitive vegetation communities.</i></p> <p>1a. The intent of this mitigation measure is to require LADWP to restore disturbed sites to pre-construction conditions or the desired future conditions per the Angeles National Forest (ANF) Land Management Plan (LMP). Before construction LADWP shall have a qualified biologist, where concurrence on the biologist has been provided by the USFS and BLM, document the community type and acreage of vegetation that would be subject to Project disturbance. Impacts to all oaks and native trees will be documented by identifying the species, number, location, and diameter at breast height (DBH). On non-federal lands, all protection and replacement measures shall be consistent with applicable local jurisdiction requirements, such as the Los Angeles County Oak Tree Ordinance. Tree removal shall not be permitted until replacement trees have been planted or transplanting sites are approved.</p> <ol style="list-style-type: none"> 1) For NFS and BLM lands, the USFS and BLM shall prepare a Habitat Restoration and Revegetation Plan, in discussion with LADWP, for the Project, which shall include plans for restoration, enhancement/re-vegetation and/or mitigation banking. For non-federal lands, LADWP shall prepare the Habitat Restoration and Revegetation Plan. Both plans shall include at minimum: (a) the location of the mitigation site (off-site mitigation may be required); (b) locations and details for topsoil storage; (c) the plant species to be used; (d) seed and cutting collecting guidelines; (e) a schematic depicting the mitigation area; (f) time of year that the planting will occur and the methodology of the planting; (g) a description of the irrigation methodology for container, bare-root or other planting needing irrigation; (h) measures to control exotic vegetation on site; (i) success criteria; (j) a detailed monitoring program; (k) locations and impacts to all oaks and native trees (over 3 inches DBH); (l) locations of temporary or permanent gates, barricades, law enforcement patrolling, or other means to control unauthorized vehicle access on access and spur roads as deemed necessary by the USFS and BLM (NFS and BLM lands only). 2) LADWP shall utilize a USFS/BLM approved locally collected seed mix, locally collected cuttings, bare-root stock, etc. to revegetate areas disturbed by construction activities. All habitats dominated by non-native species before Project disturbance shall be revegetated using appropriate native species. USFS/BLM approval is required for seeding on NFS/BLM land. The seed mix shall consist of native, locally occurring species collected from local seed sources. Cuttings and bare-root stock shall be of local origin. Restoration shall include the revegetation of stripped or exposed work sites and/or areas to be mitigated with vegetation native to the area. No commercially purchased seeds, stock, etc. will be accepted without the approval of the USFS and BLM on NFS/BLM lands, and seeds must be certified to be free of noxious weeds. Revegetation shall include ground cover, grass, shrub, and tree species to match disturbed areas to surrounding conditions and to restore or improve wildlife habitat quality to pre-Project or higher levels. The Habitat Restoration and Revegetation Plan shall also include a monitoring element. Post seeding and planting monitoring reporting will be yearly from years one to five and every other year from years six to ten or until the success criteria are met. LADWP shall restore temporarily disturbed areas, including existing tower locations that are to be removed by the Project, to pre-construction conditions or the desired future conditions per the ANF LMP. If the survival and cover requirements have not been met, LADWP is responsible for replacement planting to achieve these requirements. Replacement plants shall be monitored with the same survival and growth requirements as previously mentioned. 3) On NFS land, the USFS/LADWP will conduct a preconstruction evaluation of the probable impacts to all oaks and native trees in all construction-related disturbance areas. This evaluation shall be incorporated into the Habitat Restoration Plan and shall include the species and number of individuals, their DBH, location, and potential impact type. Construction within the driplines of all native trees and oak trees/shrubs, and incidental trimming or damage to trees along the proposed access/spur routes, shall not occur until the trees are evaluated by a USFS botanist or qualified arborist. This person shall identify appropriate measures to minimize tree loss, such as the placement of fence around the dripline, padding vehicles, minimizing soil removal or adding spoil around driplines, and the placement of matting under the existing dripline during construction activities. On the ANF, if a tree must have any construction-related activities such as equipment or soil staging within the drip zone, root pruning, or excessive branch pruning (greater than 25% in one year), then the tree must be monitored for five years for tree mortality. If any of these identified trees dies during the monitoring period, then the tree must be replaced at the rate appropriate to the DBH. 4) The replacement ratios (using rooted plants in liners or direct planting of acorns [for oaks]) for
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	<p>native trees or any oaks that are to be removed on the ANF shall be as follows: trees from 1 to 5 inches DBH shall be replaced at 3:1; trees from 5 to 12 inches shall be replaced at 5:1; trees from 12 to 24 inches shall be replaced at 10:1; trees from 24 to 36 inches shall be replaced at 15:1; and all oaks greater than 36 inches shall be replanted at a ratio of 20:1. The replacement ratio for damaged trees shall be 2:1 for trees with DBH less than 12 inches and a 5:1 ratio for trees with DBH greater than 12 inches. The DBHs for scrub oaks will be measured following California Department of Fish and Game (CDFG) guidelines. On the ANF, any oak or native tree that must be removed or killed as a result of construction or other Project-related activities shall be replaced in kind or mitigated (off-site) at a comparable value. Compliance shall be evaluated annually for years one to five and bi-annually for years six to ten (years after tree planting). Trees shall be planted at locations acceptable to the landowner or managing agency. All planting locations, procedures, and results shall be evaluated by a qualified arborist and USFS botanist. On non-federal lands, all protection and replacement measures shall be consistent with applicable local jurisdiction requirements, such as the Los Angeles County Oak Tree Ordinance.</p> <p>5) Permanent impacts on federal lands shall be determined by the appropriate federal manager (USFS and BLM) at the ratios stated below (Table BIO-MM-1) or at a comparable value. On NFS and BLM lands, impacts will be considered permanent if the trees are not likely to recover by ten years post-disturbance. Where on-site restoration is planned for mitigation of temporary impacts to vegetation communities, LADWP shall identify a Habitat Restoration Specialist, where concurrence has been provided by the USFS, to implement the method of restoration outlined by the USFS/BLM in the Habitat Restoration Plan.</p> <p>6) On USFS/BLM lands, the creation or restoration of habitat shall be monitored after mitigation site construction to assess progress and identify potential problems with the restoration site. This will be monitored on USFS/BLM lands until the success criteria are met or annually for years one to five, and bi-annually for years six to ten. Remediation activities (e.g., additional planting, removal of non-native invasive species, or erosion control) shall be taken during the ten-year period if necessary to ensure the success of the restoration effort. If the mitigation fails to meet the established performance criteria after the ten-year maintenance and monitoring period, monitoring and remedial activities shall extend beyond the ten-year period until the criteria are met or unless otherwise specified by the USFS/BLM (as appropriate). If a fire occurs in a revegetation area within the ten-year monitoring period, LADWP shall be responsible for a one-time replacement. If a second fire occurs, no replanting is required, unless the fire is caused by LADWP activity. Off-site mitigation for NFS/BLM and non-NFS/BLM lands may be required if mitigation rates exceed what can be achieved on NFS/BLM land. This may be in the form of funding for land purchase for inclusion into the Angeles National Forest, mitigation banking, removing existing structures, or comparable restoration efforts.</p> <p>1b. During and after construction, USFS/BLM-identified potential or existing entrances to Project-related disturbed areas such as access/spur roads, pull sites, staging areas, fly yards, landing zones, etc. on NFS/BLM lands shall be gated, blockaded and/or concealed in some manner and maintained to prevent the unauthorized use by the general public. Signs prohibiting unauthorized use of these disturbance areas shall be posted on these barricades if deemed necessary by the USFS/BLM. If barricades are being compromised, law enforcement patrolling may also be implemented to control unauthorized access onto Project disturbance areas.</p> <p>1c. Treat cut tree stumps with Sporax. All stumps of trees (conifers and hardwoods) resulting from activities associated with construction of the Project shall be treated with Sporax according to product directions to prevent the spread of annosus root disease. Only licensed applicators shall apply Sporax. Sporax shall not be used during rain events unless otherwise approved by the USFS.</p>
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TABLE BIO-MM-1. SUMMARY OF ESTIMATED IMPACTS TO VEGETATION COMMUNITIES ON FEDERAL LANDS

Vegetation Communities	Jurisdiction	Permanent Impacts (acres)			Temporary Impact (acres)			Total Estimated Mitigation (acres)
		Estimated Impact	Ratio	Estimated Off-site Mitigation	Estimated Impact	Ratio	Estimated On-site Restoration	
Alternative 1								
Chamise Chaparral	USFS	16.73	3:1	50.19	56.06	1:1	56.06	106.25
Mojave Creosote Bush Scrub	BLM	2.68	1:1	2.68	21.81	1:1	21.81	24.49

Vegetation Communities	Jurisdiction	Permanent Impacts (acres)			Temporary Impact (acres)			Total Estimated Mitigation (acres)
		Estimated Impact	Ratio	Estimated Off-site Mitigation	Estimated Impact	Ratio	Estimated On-site Restoration	
Mojave Wash Scrub	BLM	0.25	1:1	0.25	2.05	1:1	2.05	2.30
Riversidian Sage Scrub	USFS	3.06	5:1	15.3	10.48	2:1	20.96	36.26
Southern Coast Live Oak Riparian Forest	USFS	0.05	5:1	0.25	0.38	2:1	0.76	1.01
Southern Cottonwood Willow Riparian Forest	USFS	0.42	5:1	2.1	0.86	2:1	1.72	3.82
Southern Mixed Chaparral	USFS	14.13	3:1	42.39	45.81	1:1	45.81	88.20
Southern Sycamore Alder Riparian Woodland	USFS	0.13	5:1	0.65	0.25	2:1	0.5	1.15
Southern Willow Scrub	USFS	0.32	3:1	0.96	1.30	2:1	2.6	3.56
Alternative 2								
Chamise Chaparral	USFS	10.11	3:1	30.33	39.38	1:1	39.38	69.71
Disturbed/developed	USFS	7.8	1:1	7.8	24.8	1:1	24.8	32.6
Mojave Creosote Bush Scrub	BLM	2.69	1:1	2.69	21.82	1:1	21.82	24.51
Mojave Wash Scrub	BLM	0.25	1:1	0.25	2.06	1:1	2.06	2.31
Riversidian Sage Scrub	USFS	1.84	5:1	9.2	8.85	2:1	17.7	26.9
Southern Coast Live Oak Riparian Forest	USFS	0.69	5:1	3.45	3.39	2:1	6.78	10.23
Southern Mixed Chaparral	USFS	3.24	3:1	9.72	8.77	1:1	8.77	18.49
Southern Riparian Scrub	USFS	0.33	3:1	0.99	0.66	1:1	0.66	1.65
Southern Sycamore Alder Riparian Woodland	USFS	0.87	5:1	4.35	2.2	2:1	4.4	8.75
Alternative 2a								
Chamise Chaparral	USFS	10.11	3:1	30.33	39.38	1:1	39.38	69.71
Disturbed/developed	USFS	3.24	1:1	3.24	12.72	1:1	12.72	15.96
Interior Live Oak Chaparral	USFS	2.06	5:1	10.3	5.60	2:1	11.2	21.5
Mojave Creosote Bush Scrub	BLM	2.68	1:1	2.68	21.81	1:1	21.81	24.49
Mojave Wash Scrub	BLM	0.25	1:1	0.25	2.05	1:1	2.05	2.3
Riversidian Sage Scrub	USFS	1.84	5:1	9.2	8.85	2:1	17.7	26.9
Scrub Oak Chaparral	USFS	1.46	5:1	7.3	3.19	2:1	6.38	13.68
Southern Coast Live Oak Riparian Forest	USFS	0.69	5:1	3.45	3.40	2:1	6.8	10.25
Southern Mixed Chaparral	USFS	9.03	3:1	27.09	27.88	1:1	27.88	54.97
Southern Riparian Scrub	USFS	0.33	5:1	1.65	0.66	2:1	1.32	2.97
Southern Sycamore Alder Riparian Woodland	USFS	0.81	5:1	4.05	1.64	2:1	3.28	7.33
Alternative 3								
Chamise Chaparral	BLM	0.00	1:1	0.0	0.02	1:1	0.02	0.02
Disturbed/developed	USFS	1.04	1:1	1.04	2.13	1:1	2.13	3.17
Mojave Creosote Bush Scrub	BLM	2.68	1:1	2.68	21.81	1:1	21.81	24.49
Mojave Wash Scrub	BLM	0.25	1:1	0.25	2.05	1:1	2.05	2.3
Riversidian Sage Scrub	USFS	9.57	5:1	47.85	28.19	2:1	56.38	104.23
Scrub Oak Chaparral	USFS	2.87	5:1	14.35	5.83	2:1	11.66	26.01
Southern Riparian Scrub	USFS	0.34	5:1	1.7	0.69	2:1	1.38	3.08
New Circuit								
Chamise Chaparral	USFS	8.03	3:1	24.09	23.05	1:1	23.05	47.14
Riversidian Sage Scrub	BLM	0.04	1:1	0.04	0.34	1:1	0.34	0.38
Riversidian Sage Scrub	USFS	1.98	5:1	9.9	5.96	2:1	11.92	21.82
Southern Coast Live Oak Riparian Forest	USFS	0.08	5:1	0.4	0.66	2:1	1.32	1.72
Southern Cottonwood Willow Riparian Forest	USFS	0.40	5:1	2.0	0.80	2:1	1.6	3.6
Southern Sycamore Alder Riparian Woodland	USFS	0.09	5:1	0.45	0.19	2:1	0.38	0.83

Vegetation Communities	Jurisdiction	Permanent Impacts (acres)			Temporary Impact (acres)			Total
		Estimated Impact	Ratio	Estimated Off-site Mitigation	Estimated Impact	Ratio	Estimated On-site Restoration	Estimated Mitigation (acres)
Reconductoring								
Chamise Chaparral (Segment ABG)	USFS	16.07	3:1	48.21	32.65	1:1	32.65	80.86
Disturbed/developed (Segment ABG)	USFS	7.77	1:1	7.77	25.28	1:1	25.28	33.05
Mojave Creosote Bush Scrub (Segment ABG)	BLM	2.85	1:1	2.85	23.16	1:1	23.16	26.01
Mojave Wash Scrub (Segment ABG)	BLM	0.23	1:1	0.23	1.86	1:1	1.86	2.09
Riversidian Sage Scrub (Segment ABG)	USFS	5.07	5:1	25.35	10.30	2:1	20.6	45.95
Southern Coast Live Oak Riparian Forest (Segment ABG)	USFS	3.25	5:1	16.25	6.60	2:1	13.2	29.45
Southern Mixed Chaparral (Segment ABG)	USFS	2.86	3:1	8.58	8.01	1:1	8.01	16.59
Southern Riparian Scrub (Segment ABG)	USFS	0.33	5:1	1.65	0.66	2:1	1.32	2.97
Southern Sycamore Alder Riparian Woodland (Segment ABG)	USFS	0.95	5:1	4.75	2.34	2:1	4.68	9.43
Southern Coast Live Oak Riparian Forest (Segment K)	BLM	0.02	1:1	0.02	0.04	1:1	0.04	0.06
Southern Mixed Chaparral (Segment K)	BLM	0.00	1:1	0.0	0.01	1:1	0.01	0.01

Note: The permanent and temporary impact calculations provided above are estimates based on the impact model described in Appendix C of the Biological Resources Technical Report. Therefore, acreage numbers for the habitat types listed above may be smaller than those listed in the table. Preconstruction surveys will be conducted to estimate the acreage impacts and will be based on the final design not the impact model.

BIO-2	<p><i>The following prescriptions would prevent the spread of invasive weeds into previously uninfested areas in the designated construction right-of-way.</i></p> <p>2a Prepare and implement a Weed Control Plan. LADWP/ANF/BLM shall prepare and implement a comprehensive, adaptive Weed Control Plan on NFS/BLM lands for pre-construction and construction invasive weed abatement. The long-term Weed Control Plan, including monitoring and eradication, will be defined as part of the 50 year Operations and Maintenance Permit. On the ROW easement lands administered by the USFS/BLM, the Weed Control Plan shall incorporate all appropriate and legal agency-stipulated regulations. The Weed Control Plan shall be submitted to the USFS/BLM for final authorization of weed control methods, practices, and timing before implementation of the Weed Control Plan on public lands. Weed control on BLM lands using pesticides will require an approved BLM Pesticide Use Permit. Pesticide Use Permits are issued for a maximum of three years. ROW easements on private lands shall include adaptive provisions such as wheel and equipment washing for the implementation of the Weed Control Plan. The Weed Control Plan shall include the following:</p> <ol style="list-style-type: none"> 1) A pre-construction weed inventory shall be conducted on NFS and BLM lands by surveying all areas subject to ground-disturbing activity, including, but not limited to, tower pad preparation and construction areas, tower removal sites, pulling and tensioning sites, assembly yards, and areas subject to grading for new or improved access and spur roads. Weed populations that: (1) are rated High or Moderate for negative ecological impact in the California Invasive Plant Inventory Database (Cal-IPC 2006); (2) aid and promote the spread of wildfires (such as cheatgrass, Saharan mustard, and medusa head); and (3) are considered by the USFS and/or BLM as species of priority (for NFS/BLM lands only) shall be mapped and described according to density and area covered. In areas subject to ground disturbance, weed infestations shall be treated before construction according to control methods and practices for invasive weed populations designed in consultation with the USFS/BLM. The Weed Control Plan shall be updated and utilized for eradication and monitoring post-construction. 2) Weed control treatments shall include all legally permitted herbicide, manual, and mechanical methods applied with the authorization of the USFS/BLM. The application of herbicides shall be in compliance with
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all State and federal laws and regulations under the prescription of a Pest Control Advisor (PCA), where concurrence has been provided by the USFS/BLM, and implemented by a Licensed Qualified Applicator, if the herbicide is in the restricted use category. The most effective herbicides with the least toxic surfactant available shall be used. Herbicides shall not be applied during or within 24 hours of a 70% chance of occurring rain event. Herbicides shall not be used within Riparian Conservation Areas (RCAs) on the ANF without approval of the USFS. In riparian areas, only water-safe herbicides, surfactants and adjuvants shall be used. Herbicides shall not be applied by spray equipment when wind velocities exceed 6 mph. Herbicides applied by sponge or paintbrush to cut stumps shall not be applied at over 15 mph. In areas containing special-status plants or animals, there will be a 5- to 70-foot buffer where herbicides are not used. The size of the buffer will be determined and flagged for avoidance by an approved botanist/biologist, based on phenology or life cycle at time of treatment, rareness and imperilment of species, vulnerability of herbicide being used, concentration of herbicide used based on no observed effect concentrations and/or environmental conditions and terrain. Where manual and/or mechanical methods are used, disposal of the plant debris will follow the regulations set by the USFS/BLM. The timing of the weed control treatment shall be determined for each plant species in consultation with the USFS/BLM (on NFS/BLM lands) with the goal of controlling populations before they start producing seeds. Pre-emergent herbicides will only be used in areas that have a very low potential for supporting native plant species after disturbance, as determined by an agency botanist.

For the preconstruction and construction of the Project, measures to control the introduction and spread of noxious weeds in the Project work area shall be taken as follows.

- 3) On the ANF and BLM lands, surveying for new invasive weed populations and the monitoring of identified and treated populations shall be required at all sites impacted by construction (tower pads, staging areas, landing zones, etc.), including access/spur roads disturbed during the Project. Surveying and monitoring for weed infestations shall occur annually for years one to five and bi-annually for years six to ten, or until success criteria are met. Treatment of all identified weed populations shall occur at an appropriate interval so as to meet the success criteria. When no new seedlings or resprouts are observed at treated sites for three consecutive, normal rainfall years, the weed population can be considered eradicated and weed control efforts may cease for that impact site.
- 4) During Project preconstruction and construction, all seeds and straw materials shall be weed-free rice straw, and all gravel and fill material shall be certified weed-free by the county Agriculture Commissioners' Offices. Any deviation from this must be approved by a USFS/BLM botanist. All plant materials used during restoration shall be native, certified weed-free, and approved by the USFS/BLM.
- 5) Before beginning preconstruction activities, the USFS, in coordination with LADWP, will determine suitable locations to install field washing stations as part of the Weed Control Plan. Before commencing construction activities, LADWP shall document that all vehicles, equipment, and tools used on the Project have been cleaned at existing construction yards or legally operating car washes. This is a one-time requirement designed to address the potential of new species of weeds being transported from outside the area. If, however, vehicles, equipment, or tools are used or driven off paved roads on non-NFS lands, washing must occur before entering USFS lands.

During Project preconstruction and construction, all vehicles, equipment, or tools which will be used outside of permitted Project roadways shall be washed at the nearest station before operating off-road. In other areas also designated by the USFS, vehicles, equipment, and tools will be washed at the nearest station after exiting those areas. Vehicles that do not leave permitted Project roadways are not required to be washed after the initial washing described above. All washing shall take place where rinse water is collected and disposed of in either a sanitary sewer or landfill, unless otherwise approved by the USFS.

Written daily logs shall be kept for all vehicle/equipment/tool washing that states the date, time, location, type of equipment washed, methods used, and staff present. The log shall include the signature of a responsible staff member. Logs shall be available to the USFS for inspection at any time and shall be submitted to the USFS permit administrator on a monthly basis.

- 6) During Project operation and maintenance activities, weeds shall be cleared and disposed of in assembly yards, helicopter landing areas, tower pads, spur roads, staging areas, and any other disturbance areas in a USFS/BLM-approved method.

2b Remove weed seed sources from construction access routes. Before construction, LADWP shall initiate invasive species eradication. Populations to be treated will be small to moderate and isolated, but have the potential to spread aggressively during construction. Post-construction, these isolated populations will be included and treated according to the restoration plan. Per the Forest Service Manual (FSM) 2080 Best

	<p>Management Practice (BMP) guideline, LADWP shall also remove or reduce sources of weed seed along the travel routes associated with Project construction. Weed species identified along the Alternatives and associated access roads include tocalote, artichoke thistle, tree tobacco, saltcedar, slender wild oat/wild oat, rigput brome, soft chess brome, red brome, cheatgrass, blessed thistle, filaree, shortpod mustard, prickly lettuce, common horehound, yellow sweetclover, rabbit foot grass, Mediterranean grass, sowthistle, rat-tail fescue, tree-of-heaven, giant reed grass, yellow starthistle, bull thistle, fennel, perennial pepperweed, and black locust. To prevent the introduction or control the spread of noxious weeds, hand removal or other control methods will be implemented to reduce seed production during Project construction. Following Project approval and during the time of year when weed species can be observed and identified, LADWP shall identify, using a qualified plant ecologist, any other weed seed sources that could contribute to Project-related weed spread on the ANF and BLM lands. Target infestations identified by Project surveys should be controlled before construction. LADWP shall initiate eradication of the target infestations discovered during pre-construction surveys along construction routes.</p> <p>2c Remove weed seed sources from assembly yards, staging areas, tower pads, pull sites, landing zones, and spur roads. Before construction and during each year of use for construction at all assembly yards, staging areas, tower pads, pull sites, landing zones, and spur roads within the ANF and BLM lands, weed-infested areas should be hand-weeded and/or treated as appropriate for the individual weed species under the guidance of a qualified plant ecologist or restoration ecologist, where concurrence on the ecologist has been provided by the USFS/BLM. Unless otherwise authorized by the USFS/BLM, weed control efforts in these areas shall be timed annually to reduce shortpod mustard, tocalote, bromes and other noxious weed seed production, by hand-removing or weed-whacking infestations when flowering has just started, but before seeds have been produced. All plant debris shall be disposed of at a USFS/BLM approved location. Weed control efforts shall commence in early spring (February – March), as indicated annually by a qualified plant ecologist or restoration ecologist in coordination with LADWP and USFS/BLM botanist or weed specialist.</p> <p>2d Use of Herbicides to Control Exotic Weeds. LADWP may use herbicides where deemed necessary for the control of exotic weeds within the Project area. Weed control should be species-specific, and herbicides should be applied only if necessary after considering alternate methods or as part of a proven eradication strategy for that weed species. To minimize potential impacts, weed control treatments shall include all legally permitted herbicide, manual, and mechanical methods applied with the authorization of the USFS. Due to typically large seed banks and the ability of some weed species to vigorously resprout following removal methods, most species require more than one round of treatment, or require a different follow-up treatment method after the initial removal occurs. Any herbicide use on NFS lands would be subject to the review and approval of the appropriate USFS personnel and in coordination with LADWP.</p>
BIO-3	<p><i>Incorporate riparian area avoidance and permit measures.</i></p> <p>The following actions and all permit conditions detailed within the Nationwide 12 permit and RWQCB 401 water quality certification (subject to separate approval) would be implemented by the construction manager and environmental compliance monitor(s).</p> <p>3a LADWP shall not construct or modify any structure, culvert, or bridge or modify any habitat on NFS lands in RCAs without the authorization of the USFS. Vegetation removal or road construction shall not occur in RCAs during the breeding season for nesting birds (February 1 to August 15) unless otherwise approved by the USFS. LADWP shall prepare and implement a USFS RCA Treatment Plan for the Project. This Plan shall include the specific activities that will occur at each of the RCA points crossed by the Project, including the amount and type of vegetation to be cleared, the type of road crossing or improvement allowed for wet and dry crossings, and the methods that would be employed to reduce the effects of the Project on water quality. The Plan shall include seasonal restrictions for vehicle or equipment passage, restrictions on what activities may occur (such as grading, vegetation removal or tree trimming), monitoring requirements, and restoration requirements. This Plan shall be submitted to the USFS for approval before construction or the grading of any access road.</p> <p>3b Before construction, qualified resource specialists shall stake and flag or fence exclusion zones around all identified riparian areas. Such exclusion zones will include a 10-foot buffer to preclude sediment intrusion into the riparian areas. Earth-moving activities shall be restricted from these zones, although essential vehicle operation and foot travel will be permitted on existing roads, bridges, and crossings. All other construction activities, vehicle operation, material and equipment storage, and other surface-disturbing activities will be prohibited within the exclusion zone.</p> <p>3c In areas where riparian habitats are unavoidable, the construction manager, in consultation with the lead environmental compliance inspector and USFS, shall narrow the width of the road through the area to the minimum extent required for safe travel. New spur roads and existing access road improvements shall be constructed and implemented using methodology that preserves existing hydrology.</p> <p>3d Towers shall not be constructed in riparian areas.</p>

	<p>3e All temporarily disturbed riparian areas that would not be utilized for future routine operation and maintenance activities shall be restored according to the guidelines of the Habitat Restoration Plan to the extent required to ensure no net loss of habitat functions and values. Following construction activities, the areas will be restored as soon as practicable.</p> <p>3f Permanent, unavoidable losses of riparian areas will be mitigated by restoration and/or preservation of off-site habitats, as outlined in the Habitat Restoration Plan. The final mitigation and off-site restoration locations will be determined in consultation with LADWP and the responsible agency(s). Mitigation acreage ratios will be consistent with those listed in Table BIO-MM-1.</p>
BIO-4	<p><i>Provide restoration/compensation for affected jurisdictional areas.</i></p> <p>4a Impacts to areas under jurisdiction of the USACE, RWQCB, USFS and CDFG shall be avoided to the extent feasible. Where avoidance of jurisdictional areas is not feasible, including emergency repairs, and access/spur roads within RCAs, the applicant shall provide the necessary mitigation required as part of wetland permitting. This will include creation, restoration, and/or preservation of suitable jurisdictional habitat along with adequate buffers to protect the function and values of jurisdictional area mitigation. The location(s) of the mitigation will be determined in consultation with LADWP and the responsible agency(s) as part of the wetland permitting process.</p> <p>4b Measures 3a, b, c, and d will also be incorporated to avoid and protect jurisdictional areas.</p>
BIO-5	<p><i>Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife.</i></p> <p>5a. Conduct preconstruction surveys in locations where potential habitat exists for special-status species. If sign or habitat is detected during the surveys, construction activities will be monitored by biologists, or exclusion fencing will be placed around work areas. If individuals are found within the area of potential effect, they will be relocated to areas (as authorized by the Biological Opinion for federally listed species) that are not potentially impacted by the Project.</p> <p>5b. Cover all steep-walled trenches or excavations used during construction to prevent entrapment of wildlife (e.g., reptiles and small mammals). If the trenches or excavations cannot be covered, a ramp that will sufficiently allow wildlife to escape shall be placed into the trench or excavated area, or exclusion fencing (i.e., silt fencing) shall be installed around the trench or excavation to prevent entrapment of wildlife. Open trenches, or other excavations that could entrap wildlife, shall be inspected by the qualified biologists a minimum of three times per day and immediately before backfilling. Furthermore, employees and contractors shall look under vehicles and equipment for the presence of wildlife before moving the vehicle or equipment. If wildlife is observed, no vehicles or equipment would be moved until the animal has left voluntarily or is removed by the qualified biologist. Should a dead or injured special-status species be found in a trench or excavation or anywhere in the construction zone or along an access road, the qualified biologist shall contact BLM and/or USFS (for activities on land managed by the agencies) and the Wildlife Agencies within 48 hours of the finding. The qualified biologist shall report the species found, the location of the finding, and the cause of death (if known), and shall submit a photograph and any other pertinent information.</p>
BIO-6	<p><i>Implement a Worker Environmental Awareness Program.</i></p> <p>A qualified biologist(s) shall conduct a detailed biological Worker Environmental Awareness Program (WEAP) for all Project personnel before any construction or activities within the Project footprint. The WEAP shall include discussions of Project permits and brief summaries of their conditions; discussions of agency involvement, their applicable sensitivity measures, and relevant environmental protection legislation (e.g., the Endangered Species Act, the Migratory Bird Treaty Act); descriptions of special-status species and other sensitive resources that could exist in the Project area, along with their locations, legal status and protections; and a review of all measures to be implemented for avoidance of these sensitive resources. The final list of wildlife species to be included in the WEAP may be reduced at the discretion of the biologist with concurrence from applicable agencies. BIO-6 is in addition to LADWP's General Practice (GP) 69 WEAP, which does not provide the level of biological detail this mitigation measure provides.</p> <p>6a. Training materials and briefings shall also include the consequences of non-compliance with these acts; identification and values of plant and wildlife species and significant natural plant community habitats; fire protection measures; sensitivities of working on NFS lands and identification of USFS sensitive species; hazardous substance spill prevention and containment measures; a contact person in the event of the discovery of dead or injured wildlife; and review of mitigation requirements. Discussion of GPs and BMPs shall include topics such as appropriate work limits, avoiding the spread of non-native plant species, fire safety, wildlife avoidance, trash and debris collection, spill prevention and containment protocol, and appropriate protocol for passage and/or construction near riparian zones. Sightings of sensitive wildlife species or harmful encounters with any wildlife species shall be reported to the Project biologist immediately for evaluation and, as necessary, reporting to agencies.</p> <p>6b. The WEAP shall also include the protocol to be followed when road kill is encountered in the work area or along</p>

	<p>access roads to minimize potential for additional mortality of scavengers, including listed species such as the California condor. On NFS/BLM lands, road kill shall be reported to the USFS/BLM or other applicable agency within 24 hours. On non-NFS lands, road kill shall be reported to the appropriate local animal control agency within 24 hours. Training materials and a course outline shall be provided to the USFS/BLM for review and approval at least 30 days before the start of construction. Maps showing the location of special-status wildlife, fish, or populations of rare plants, exclusion areas, or other construction limitations (e.g., limited operating periods) will be provided to the environmental monitors and construction crews before ground disturbance.</p> <p>6c. The training shall be conducted for all crew members present for the start of construction. If new crew members are brought to the Project after this time, they shall take part in the WEAP before beginning construction work; if the biologist is not available at this time, new crew members shall be given a summary handout of the WEAP until the full WEAP can be administered by the Project biologist, to be conducted no more than one workweek following the crew members' assignment to the Project. All crew members who have completed the WEAP shall submit their names to a list to be updated continuously and furnished to agencies upon request. No construction worker may work in the field for more than five days without participating in the WEAP.</p>
BIO-7	<p><i>Impacts to Raptors.</i></p> <p>7a. If Project construction activities cannot occur completely outside the bird breeding season, then pre-construction surveys for active nests shall be conducted by a qualified biologist within 1,200 feet of the construction zone no more than seven days before the initiation of construction that would occur between February 1 and August 15. The required survey dates may be modified based on local conditions (e.g., high altitude locations) with the approval of the CDFG, BLM, and/or USFS. LADWP shall be responsible for designating qualified biologists who can conduct pre-construction surveys and monitoring for breeding birds. The résumé of the proposed biologists will be provided to the BLM and USFS for concurrence before ground disturbance. If breeding birds with active nests are found, a biological monitor shall establish a species-specific buffer around the nest for ground-based construction activities and a one-mile buffer for helicopter use if helicopters are flying below 300 feet, and no activities will be allowed within the buffer(s) until the young have fledged from the nest or the nest fails. If nesting bald or golden eagles are identified, a 660-foot no activity buffer will be implemented. The buffer (660-foot eagle and one-mile helicopter) may be adjusted to reflect existing conditions, including ambient noise, topography, and disturbance, with the approval of the U.S. Fish and Wildlife Service (USFWS), CDFG, BLM or USFS, as appropriate (USFS 2005). On NFS lands, the USFS shall apply the USFS Land Management Plan Standard S18 (Part 3 of the Land Management Plan), which states, "Protect known active and inactive raptor nest areas. Extent of protection will be based on proposed management activities, human activities existing at the onset of nesting initiation, species, topography, vegetative cover, and other factors. When appropriate, a no-disturbance buffer around active nest sites will be required from nest-site selection to fledging." If for any reason a bird nest must be removed during the nesting season, LADWP shall provide written documentation providing concurrence from the USFWS and CDFG authorizing the nest relocation. On NFS lands, this will include coordination and written approval from the USFS. On BLM lands, this will include coordination and written approval by the BLM. LADWP shall provide a written report documenting the relocation efforts. The report shall include what actions were taken to avoid moving the nest, the location of the nest, what species is being relocated, the number and condition of the eggs taken from the nest, the location of where the eggs are incubated, the survival rate, the location of the nests where the chicks are relocated, and whether the birds were accepted by the adopted parent.</p> <p>7b. Before construction, LADWP shall identify all existing raptor nests that would be affected by Project construction. LADWP shall coordinate with the USFWS, CDFG, USFS and BLM for the proposed removal of nests that may present safety issues associated with the construction activities. All nest removals shall occur after the nest is demonstrated to be inactive by a qualified biologist and have been shown to not result in take as defined by the Migratory Bird Treaty Act (MBTA).</p>
BIO-8	<p><i>Avoid nesting season and limit disturbance of nesting birds.</i></p> <p>LADWP shall conduct pre-construction surveys for nesting birds if construction and removal activities are scheduled to occur during the breeding season. Surveys shall be conducted in areas within 500 feet of tower sites, laydown/staging areas, substation sites, access/spur road locations, or any other area subject to ground disturbance. Surveys for birds shall be conducted for all areas from February 1 to August 15. The required survey dates may be modified based on local conditions (e.g., high altitude locations) with the approval of the CDFG and/or USFS. LADWP shall be responsible for designating qualified biologists who can conduct pre-construction surveys and monitoring for breeding birds. The résumé of the proposed biologists will be provided to the USFS for concurrence before ground disturbance.</p> <p>If breeding birds with active nests are found, a biological monitor shall establish a 300-foot buffer around the nest for</p>

	<p>ground-based construction activities and a one-mile buffer for helicopter use if helicopters are flying below 300 feet, and no activities will be allowed within the buffer(s) until the young have fledged from the nest or the nest fails. If nesting bald or golden eagles are identified, a 660-foot no activity buffer will be implemented. The 300-foot (or 660-foot eagle and one-mile helicopter) buffer may be adjusted to reflect existing conditions, including ambient noise, topography, and disturbance with the approval of the USFWS, CDFG, or USFS, as appropriate and in coordination with LADWP. On NFS lands, the USFS shall have the authority to define/redefine such buffers. The biological monitors shall conduct regular monitoring of the nest to determine success/failure and to ensure that Project activities are not conducted within the buffer(s) until the nesting cycle is complete or the nest fails.</p> <p>The biological monitors shall be responsible for documenting the results of the surveys and the ongoing monitoring and will provide a copy of the monitoring reports for impact areas to the respective agencies (e.g., on NFS lands documentation will be provided to the Forest Biologist). If for any reason a bird nest must be removed during the nesting season, LADWP shall provide written documentation providing concurrence from the USFWS and CDFG authorizing the nest relocation. On NFS lands, this will include coordination and written approval from the USFS. LADWP shall provide a written report documenting the relocation efforts. The report shall include what actions were taken to avoid moving the nest, the location of the nest, what species is being relocated, the number and condition of the eggs taken from the nest, the location of where the eggs are incubated, the survival rate, the location of the nests where the chicks are relocated, and whether the birds were accepted by the adopted parent.</p>
BIO-9	<i>No mitigation measures required for Impact BIO-9.</i>
BIO-10	<i>No mitigation measures required for Impact BIO-10.</i>
BIO-11	<p><i>Reduce avian electrocutions/collisions on transmission lines.</i></p> <p>Raptor safety protection will be required on tower/conductor (lines) in appropriate locations. The Project would have minimum clearance between phase conductors or between phase conductors and grounded hardware, as recommended by the Avian Power Line Interactive Committee (APLIC 2006), that are sufficient to protect even the largest birds, such as California condor, and therefore would present little to no risk of bird electrocution.</p> <p>New Project structures shall be designed to implement collision-reducing techniques as described in the latest version of the APLIC guidelines. Devices such as swan wrapping or other similar functioning devices may be required if areas are identified as being a hazard to birds. In addition, per General Practice (GP) 8, an Avian Protection Plan will be developed for this Project that will include avian collision protocols.</p>
BIO-12	<i>No mitigation measures required for Impact BIO-12.</i>
BIO-13	<p><i>Protect special-status plant species and their habitat.</i></p> <p>13a. Conduct preconstruction surveys for State and federal Threatened, Endangered, Proposed, Petitioned, Candidate, USFS Sensitive, USFS Watch, BLM Sensitive, and California Native Plant Society (CNPS) listed plants and avoid any occurrences of these plants. LADWP shall conduct pre-construction surveys for State and federally listed Threatened and Endangered, Proposed, Petitioned, and Candidate plants in a 250-foot radius around all areas subject to ground-disturbing activity, including, but not limited to, tower pad preparation and construction areas, tower removal sites, pulling and tensioning sites, assembly yards, and areas subject to grading for new access roads. The surveys shall be conducted during the appropriate blooming period(s) by a qualified plant ecologist/biologist according to protocols established by the USFWS, CDFG, USFS, BLM, and CNPS. The résumé of the proposed biologists will be provided to the USFS and BLM for concurrence before ground disturbance. The completion of these surveys shall be coordinated with the federal land manager. All listed plant species found shall be marked and avoided. If a federally listed plant species cannot be avoided on private land, consultation with USFWS will occur.</p> <p>13b. Before site grading, any populations of listed plant species identified during the surveys shall be protected by a buffer zone. The buffer zone shall be established around these areas and shall be of sufficient size to eliminate potential disturbance to the plants from human activity and any other potential sources of disturbance, including human trampling, erosion, and dust. The size of the buffer will depend upon the proposed use of the immediately adjacent lands, and include consideration of the plant's ecological requirements (e.g., sunlight, moisture, shade tolerance, edaphic physical and chemical characteristics) that are identified by a qualified plant ecologist and/or Forest botanist. At minimum, the buffer shrub species shall be equal to twice the drip line (i.e., two times the distance from the trunk to the canopy edge) to protect and preserve the root systems of the plant. The buffer for herbaceous species shall be, at minimum, 50 feet from the perimeter of the population or the individual. A smaller buffer may be established, provided there are adequate measures in place to avoid the take of the species, with the approval of the USFWS, CDFG, USFS, and BLM and in coordination with LADWP. If impacts to listed plants are determined to be unavoidable, the</p>

	<p>USFWS shall be consulted for authorization, through the context of a Biological Opinion. Additional mitigation measures to protect or restore listed plant species or their habitat may be required by the USFWS before impacts are authorized, whichever is appropriate.</p> <p>13c. Impacts to non-listed plant species (i.e., USFS Sensitive, CNPS List 1,2 and 4 species) shall first be avoided where feasible, and, where not feasible, impacts shall be compensated through reseedling (with locally collected seed stock), or other USFS or BLM approved methods. For USFS lands, if the ANF determines Project activities will result in the loss of a significant portion of the known individuals of USFS Sensitive plant species, and reseedling/transplanting are not feasible options, LADWP shall preserve existing off-site occupied habitat that is not already part of the public lands in perpetuity at a 2:1 mitigation ratio (habitat preserved: habitat impacted). This ratio will apply only to specific acreage inhabited by special-status plant species that are removed during construction, and will supersede ratios listed in Table BIO-MM-1 regardless of habitat type. The determination of a significant rare plant population loss will be decided by the ANF botanist on a species and location basis, after available literature, research, and overall species distribution are reviewed. If avoidance, reseedling/transplanting, and, preservation of off-site habitat occupied by the impacted species are not found to be possible, the ANF will consider off-site restoration of degraded ANF lands and/or preservation of non-public lands with suitable habitat for the impacted species. The preserved habitat shall be of superior or similar habitat quality to the impacted areas in terms of soil features, extent of disturbance, habitat structure, and dominant species composition, as determined by a qualified plant ecologist.</p> <p>13d. All special-status plant species impacted by Project activities shall be documented in an annual report and submitted to the federal land manager (USFS and BLM) until the success criteria outlined in the Habitat Restoration Plan are met. Where reseedling has occurred, LADWP shall track the success of the plants during the course of the annual restoration monitoring. This information shall be submitted as part of the annual report to the federal land manager (USFS and BLM).</p>
<p>BIO-14</p>	<p><i>Protect western yellow-billed cuckoo, southwestern willow flycatcher, least Bell's vireo, and their habitat.</i></p> <p>14a All Project activities taking place within suitable habitat for the western yellow-billed cuckoo, southwestern willow flycatcher, and least Bell's vireo shall be conducted from November through early March, which is a period outside their breeding seasons (Sedgwick 2000, Sogge 2000, Brown 1993, Kus 2002, Hughes 1999). If these activities cannot be avoided during the breeding season, the following measures shall apply:</p> <p>14b If construction activities must occur during the breeding season in areas that have the potential to support listed riparian species, a qualified ornithologist shall conduct protocol surveys of the Project and adjacent areas within 500 feet to determine if this species is present within the area and to determine breeding status. USFWS protocol surveys will be conducted for southwestern willow flycatcher, least Bell's vireo, and western yellow-billed cuckoo (if no protocols exist, the appropriate land management agency will establish the protocols to be used). In known occupied habitat for listed riparian birds, LADWP shall only conduct focused surveys of the Project and adjacent areas within 500 feet. The surveys shall be of adequate duration to verify potential nest sites if work is scheduled to occur during the breeding season. If breeding is confirmed, the USFWS-recommended buffers will be applied and no activities will occur within that buffer.</p> <p>14c Protocol or focused surveys, as appropriate, should be conducted within one year of start of construction. However, on NFS lands, annual surveys in suitable habitat may be required during construction. These surveys may be modified through the coordination with the USFWS, CDFG, USFS, LADWP and the BLM based on the condition of habitat, the observation of the species, or avoidance of riparian areas during the breeding season.</p> <p>14d If a territory or nest is confirmed, the USFWS and CDFG shall be notified immediately. On NFS or BLM lands, these agencies would be notified immediately. In coordination with the USFWS, CDFG and the appropriate land management agency, a 300-foot disturbance-free buffer shall be established and demarcated by fencing or flagging. This buffer may be adjusted, provided noise levels do not exceed 60 dB(A) hourly Leq at the edge of the nest site as determined by a qualified biologist in coordination with a qualified acoustician. If the noise meets or exceeds the 60 dB(A) Leq threshold, or if the biologist determines that the construction activities are disturbing nesting activities, the biologist shall notify the construction manager, and the construction manager, in consultation with the biologist and USFS, has the authority to halt the construction and shall devise methods to reduce the noise and/or disturbance in the vicinity. This may include methods such as, but not limited to, turning off vehicle engines and other equipment whenever possible to reduce noise, installing a protective noise barrier between the nest site and the construction activities, and working in other areas until the young have fledged. If noise levels still exceed 60 dB(A) Leq hourly at the edge of nesting territories and/or a no-construction buffer cannot be maintained, construction shall be deferred in that area until the nestlings have fledged. All active nests shall be monitored on a weekly basis until the nestlings fledge. No construction or vehicle traffic shall occur within this buffer during the breeding season for these species.</p>

	<p>14e The nest must be monitored by a qualified biologist during the construction activities. If the monitor determines that Project activities are disturbing or disrupting nesting activities, the monitor shall notify the construction manager, and the construction manager, in consultation with the biological monitor, has the authority to implement measures to reduce the noise and/or disturbance in the vicinity.</p>
BIO-15	<p><i>Protect coastal California gnatcatcher and its habitat.</i></p> <p>15a. All Project activities taking place within suitable habitat for the coastal California gnatcatcher shall be conducted from September through February, which is outside their breeding season. If these activities cannot be avoided during the breeding season, the following measures shall apply:</p> <p>15b. LADWP shall conduct protocol surveys for coastal California gnatcatchers in areas supporting coastal sage scrub habitat that may be affected by the Project. In known occupied habitat for the California gnatcatcher, LADWP shall only conduct focused surveys for coastal California gnatcatchers. Survey areas shall include a 500-foot buffer around Project disturbance areas.</p> <p>15c. If a territory or nest is confirmed, the USFWS shall be notified immediately; on NFS or BLM lands, these agencies would also be notified immediately. In coordination with the USFWS and the appropriate land management agency, a 300-foot disturbance-free buffer shall be established and demarcated by fencing or flagging. This buffer may be adjusted, provided noise levels do not exceed 60 dB(A) hourly Leq at the edge of the nest site as determined by a qualified biologist in coordination with a qualified acoustician. If the noise meets or exceeds the 60 dB(A) Leq threshold, or if the biologist determines that the construction activities are disturbing nesting activities, the biologist shall notify the construction manager, and the construction manager, in consultation with the biologist, has the authority to halt the construction and shall devise methods to reduce the noise and/or disturbance in the vicinity. This may include methods such as, but not limited to, turning off vehicle engines and other equipment whenever possible to reduce noise, installing a protective noise barrier between the nest site and the construction activities, and working in other areas until the young have fledged. If noise levels still exceed 60 dB(A) Leq hourly at the edge of nesting territories and/or a no-construction buffer cannot be maintained, construction shall be deferred in that area until the nestlings have fledged. All active nests shall be monitored on a weekly basis until the nestlings fledge. No Project activities may occur in these areas unless otherwise authorized by USFWS. LADWP shall obtain incidental take authorization from the USFWS before further activities.</p> <p>15d. Protocol or focused surveys, as appropriate, shall be conducted, at a minimum, within one year of start of construction. These surveys may be modified through the coordination with the USFS, BLM, and CDFG based on the condition of habitat, the observation of the species, or avoidance of nesting areas during the breeding season.</p> <p>15e. Construction activities in occupied gnatcatcher habitat will be monitored by a full-time qualified biologist. The monitoring shall be of a sufficient intensity to ensure that the biologist could detect the presence of a bird in the construction area. At a minimum, one full-time monitor shall be present for every two miles of active construction within occupied habitat. The monitors shall notify the construction manager, and the construction manager, in consultation with the biologist, will have the authority to halt all activities until appropriate corrective measures have been completed.</p>
BIO-16	<p><i>Protect burrowing owl.</i></p> <p>The following measures are proposed to minimize the potential for take of burrowing owl nests during construction associated with the proposed Project.</p> <p>16a Preconstruction surveys will be conducted throughout the Project site and laydown areas for burrowing owls, possible burrows, and sign of owls (e.g., pellets, feathers, white wash).</p> <p>16b Occupied burrows will not be disturbed during the breeding season (February 1 through August 31) unless an approved biologist verifies, through non-invasive methods, that both 1) the birds have not begun egg-laying and incubation, and 2) that juveniles from the occupied burrow are foraging independently and are capable of independent survival.</p> <p>16c Occupied burrows will be protected with a 600-foot buffer, if possible.</p> <p>16d When the destruction of an occupied burrow is unavoidable, the owl(s) will be passively relocated in accordance with the CDFG memo dated October 17, 1995. Relocation efforts will occur at least one week before ground disturbance of the area. A biologist will monitor the success of the relocation. A monitoring plan will be submitted to and approved by CDFG and BLM.</p> <p>16e Off-site mitigation will be pursued to enhance existing habitat in the region or fund research into the species to enhance survivorship of the species in the region.</p>
BIO-17	<p><i>Protect the bald eagle and golden eagle.</i></p> <p>17a If construction occurs during bald eagle and golden eagle breeding season, preconstruction surveys shall be conducted, in accordance with USFWS protocol requirements, for the Project area in regions with suitable</p>

	<p>habitat. Any active nests shall have an appropriate exclusion buffer established. This buffer shall be established based on existing conditions in consultation with the LADWP, USFS, BLM, CDFG and/or USFWS.</p> <p>17b Whenever bald eagles and golden eagles are observed within 100 yards of the construction area, construction shall be halted and shall not resume until the eagles leave.</p> <p>17c If a helicopter will be used for construction or maintenance, the aircraft must be no closer than 1,000 feet vertical or horizontal distance from communal roost sites.</p>
BIO-18	<p><i>Protect California condor.</i></p> <p>18a For all Project activities taking place immediately adjacent to or within known condor-occupied areas, a qualified biologist will monitor all construction activities and assist LADWP in the implementation of the monitoring program. The résumé of the proposed biologist(s) will be provided to the BLM and USFS for concurrence. This biologist(s) will be referred to as the authorized biologist hereafter. The authorized biologist will be present during all activities immediately adjacent to or within known condor-occupied areas. The authorized biologist shall notify the construction manager, and the construction manager, in consultation with the biologist, will have the authority to halt all activities until appropriate corrective measures have been completed. If condors are observed in helicopter construction areas, LADWP shall avoid further helicopter use until the animals have left the area. The authorized biologist will have radio contact with the Project foreman, who will be in radio contact with the helicopter pilot. The biologist will provide information to LADWP to avoid conflicts with condors. All condor sightings in the Project area will be reported to the USFWS and USFS (on NFS lands). LADWP will coordinate with USFWS on the construction schedule and helicopter work areas to determine if any condors have been tracked or observed in the vicinity of the Project area. If condors are observed in helicopter construction areas, LADWP shall avoid further helicopter use until the animals have left the area and the USFWS will be notified immediately. Should condors be found roosting within 0.5 mile of the construction area, no construction activity shall occur between one hour before sunset to one hour after sunrise, or until the condors leave the area. Should condors be found nesting within 1.5 miles of the construction area, no construction activity will occur until further authorization from the USFWS and USFS (on NFS lands).</p> <p>18b Microtrash. All trash is required to be disposed of as written in the Proper Disposal of Construction Waste Plan for the Project. Additional language has been added to this Plan to address the disposal of microtrash. Workers will be trained on the issue of microtrash – what it is, its potential effects to California condors, and how to avoid the deposition of microtrash. In addition, all workers will properly dispose of their trash throughout the day and daily sweeps of the work area will occur to collect and remove trash in locations with the potential for California condors to occur.</p> <p>18c California Condor Worker Education Program. LADWP will develop a flyer that will be distributed to all workers on the Project concerning information on the California condor. Information to be included consists of the following: species description with photos and/or drawings indicating how to identify the California condor and how to distinguish condors from turkey vultures and golden eagles; protective status and penalties for violation of the Endangered Species Act; avoidance measures being implemented on the Project; and contact information for communicating condor sightings.</p> <p>18d Reporting. All California condor sightings in the Project area will be reported directly to the USFWS, USFS, and BLM (as appropriate). Before commencement of helicopter activity, LADWP will coordinate with a USFWS condor biologist to determine if any condors have been tracked or observed in the vicinity of the Project area.</p>
BIO-19	<p><i>Protect California spotted owl.</i></p> <p>Before construction activities within suitable habitat, LADWP shall have a qualified biologist conduct USFS protocol surveys for the California spotted owl to establish or confirm the location of nests within the Project. The résumés of the proposed biologists shall be provided to the USFS for concurrence. If nests or breeding pairs are found during the surveys, the limited operating period (LOP) will be applied according to the ANF Land Management Plan (Standard 20 – Part 3). No Project-related activities will be allowed within these dates (February 1 to August 15) or until chicks have fledged. Where a biological evaluation by a qualified ornithologist determines that a nest site would be shielded from planned activities by topographic or other features that would minimize disturbance, the buffer distance may be reduced upon approval of the USFS on NFS lands. In addition, no helicopter overflights shall be authorized without USFS approval. If approved, minimum altitudes will be 300 feet above a territory at an altitude designated by the USFS. This buffer may be adjusted through consultation with the USFS.</p>
BIO-20	<p><i>Protect American badger, Mohave ground squirrel, Tehachapi pocket mouse, and kit fox.</i></p> <p>20a. In areas identified as suitable habitat during the 2008 surveys, preconstruction surveys will occur for badgers, ground squirrels, pocket mice, and kit foxes. If present and feasible, construction would be avoided in or adjacent to occupied habitat during breeding season.</p>

	20b. LADWP will consult with CDFG to see if a 2081 Permit for incidental take of Mohave Ground Squirrel is required.
BIO-21	<p><i>Protect sensitive bat species.</i></p> <p>21a LADWP shall conduct a pre-construction survey (e.g., vegetation removal, grading) for roosting bats within 200 feet of Project activities within 15 days before any grading of rocky outcrops or removal of trees (particularly trees 12 inches in diameter or greater than 4.5 feet above-grade with loose bark or other cavities).</p> <ol style="list-style-type: none"> 1) LADWP shall also conduct surveys for roosting bats during the maternity season (March 1 to July 31) within 300 feet of Project activities. Trees and rocky outcrops shall be surveyed by a qualified bat biologist (i.e., a biologist holding a CDFG collection permit and a Memorandum of Understanding with CDFG allowing the biologist to handle bats). Surveys duration shall be a minimum of one day and one evening. The résumé of the biologist shall be provided to the USFS and BLM (as appropriate) for concurrence before any Project activities. 2) If active maternity roosts or hibernacula are found, the rock outcrop or tree occupied by the roost shall be avoided (i.e., not removed) by the Project, if feasible. If avoidance of the maternity roost is not feasible, the bat biologist shall survey (through the use of radio telemetry or other CDFG/USFS/BLM approved methods) for nearby alternative maternity colony sites. If the bat biologist determines, in consultation with and with the approval of the CDFG, USFS, and BLM (as appropriate), that there are alternative roost sites used by the maternity colony and young are not present, no further action is required, and it will not be necessary to provide alternative roosting habitat (i.e., Mitigation Measure BIO-21b would not apply, although Mitigation Measure BIO-21c would still apply). However, if there are no alternative roost sites used by the maternity colony, Mitigation Measure BIO-21b is required. If no active roosts are found, no further action is required. If active maternity roosts are absent, but a hibernaculum (i.e., a non-maternity roost) is present, Mitigation Measure BIO-21b is not necessary, but Mitigation Measure BIO-21c is required. <p>21b Provision of substitute roosting bat habitat. If a maternity roost will be impacted by the Project, and no alternative maternity roosts are in use near the site, substitute roosting habitat for the maternity colony shall be provided on, or close to, the Project site no less than three months before the eviction of the colony. Alternative roost sites will be constructed in accordance with the specific bats' requirements in coordination with CDFG and ANF. By making the roosting habitat available before eviction (Mitigation Measure BIO-21c), the colony will have a better chance of finding and using the roost. Large concrete walls (e.g., on bridges) on south or southwestern slopes that are retrofitted with slots and cavities are an example of structures that may provide alternative roosting habitat appropriate for maternity colonies. Alternative roost sites must be of comparable size and proximal in location to the impacted colony. The CDFG shall also be notified of any hibernacula or active nurseries within the construction zone.</p> <p>21c Exclude bats before demolition of roosts. If non-breeding bat hibernacula are found in towers or trees scheduled to be removed or in crevices in rock outcrops within the grading footprint, the individuals shall be safely evicted, under the direction of a qualified bat biologist, by opening the roosting area to allow airflow through the cavity or other means determined appropriate by the bat biologist (e.g., installation of one-way doors). The résumé of the bat biologist shall be provided to the USFS and BLM (as appropriate) for concurrence before any Project activities. In situations requiring one-way doors, a minimum of one week shall pass after doors are installed, and temperatures should be sufficiently warm for bats to exit the roost, because bats do not typically leave their roost daily during winter months in southern coastal California. This action should allow all bats to leave during the course of one week. Roosts that need to be removed in situations where the use of one-way doors is not necessary in the judgment of the qualified bat biologist shall first be disturbed by various means at the direction of the bat biologist at dusk to allow bats to escape during the darker hours, and the roost tree shall be removed or the grading shall occur the next day (i.e., there shall be no less or more than one night between initial disturbance and the grading or tree removal).</p> <ol style="list-style-type: none"> 1) If an active maternity roost is in an area to be impacted by the Project, and alternative roosting habitat is available, the demolition of the roost site must commence before maternity colonies form (i.e., before March 1) or after young are flying (i.e., after July 31) using the exclusion techniques described above. <p>21d Survey for bat nursery colonies. A CDFG-approved biologist shall conduct a habitat assessment for bat nursery colonies before any construction activity. The approved biologist shall then conduct a survey for bat nursery colonies or signs of such colonies before construction. Direct impacts to a nursery colony site shall not be allowed, and approach of, or entrance to, an active nursery colony site shall be prohibited. Before any blasting or drilling in the vicinity of a nursery colony site, the CDFG-approved biologist shall work with the construction crew to devise and implement methods to minimize potential indirect impacts to the nursery colony site from falling rock or substantial vibration (while a nursery colony is active). The methods shall</p>

	<p>include an option to halt any construction activity that would cause falling rock, substantial vibration impacts, or any other construction-related impact to a nursery colony as determined by the approved biologist, until the colony is inactive. Should falling rock block the entrance to a nursery colony site, the contractor shall work with the approved biologist to reopen an entrance to the site.</p> <p>21e If habitat must be removed for construction to continue, a two-step removal process will be implemented. The two-step removal process will involve permitted biologists to alter the habitat outside of the season of use (i.e., outside of hibernating/maternity season) to make the habitat less suitable, and the following day the habitat will be removed under the supervision of the permitted biologist.</p>
BIO-22	<p><i>Protect special-status reptile species.</i></p> <p>A qualified biologist with demonstrated expertise with special-status herpetofauna shall monitor all construction activities and assist LADWP in the implementation of the monitoring efforts. The résumé of the proposed biologist will be provided to the USFS or BLM (as appropriate) for concurrence before the onset of ground-disturbing activities. The authorized biologist will be present during ground-disturbing activities immediately adjacent to or within habitat that supports populations of the special-status herpetofauna. Any special-status herpetofauna found within a Project impact area shall be salvaged by the authorized biologist and relocated to suitable habitat outside the impact area. If the installation of exclusion fencing is deemed necessary by the authorized biologist, the authorized biologist will direct the installation of the fence. Clearance surveys for special-status herpetofauna shall be conducted by the authorized biologist before the initiation of construction each day.</p>
BIO-23	<p><i>Protect desert tortoise and habitat loss.</i></p> <p>23a Preconstruction clearance surveys will be conducted for desert tortoise in the area designated as a "Survey Area" in the West Mojave Plan, "Alternative A" and areas within suitable habitat. If tortoise sign is found, construction activities should either be monitored by a tortoise biologist with a valid permit, or a tortoise-proof fence should be erected to preclude tortoise from the area of impact. If no tortoise sign is found, monitoring by a tortoise biologist would not be required. Instead, a biologist could be on call should a tortoise wander into non-monitored sites.</p> <p>23b To facilitate the free movement of desert tortoises, roadbeds should not be lowered, and berms placed along dirt roads should not exceed 12 inches or a slope of 30 degrees within the area designated as a "Survey Area" in the West Mojave Plan, "Alternative A" and areas that sign or habitat was found during the preconstruction surveys.</p> <p>23c Burrows within 100 feet of the construction zone shall be flagged by a person authorized by the USFWS to handle desert tortoises so that the qualified biologist would be able to more easily locate them during construction. The qualified biologist shall be on-site to monitor all construction that occurs in the vicinity of flagged burrows and to watch for desert tortoise.</p> <p>23d All desert tortoise burrows or pallets in the construction area shall be excavated by the USFWS-authorized biologist.</p> <p>23e A translocation plan will be approved by the wildlife agencies before removal or handling of tortoise.</p> <p>23f Desert tortoises that are found above ground during construction and need to be moved from potential harm shall be placed in the shade of a shrub by the USFWS-authorized biologist. Any desert tortoise removed from burrows shall be placed in an unoccupied burrow of approximately the same size as the one from which it was removed. Tortoises shall not be placed more than 1,000 feet from where they were found. If an existing burrow is unavailable, the authorized biologist shall construct or direct the construction of a burrow of similar size, shape, depth, and orientation as the original burrow. Desert tortoises moved during inactive periods would be monitored for at least two days after placement in the new burrows to ensure their safety. The authorized biologist shall be allowed some judgment and discretion to ensure that the survival of the desert tortoise is likely.</p> <p>23g If a tortoise is in a construction or maintenance area and is not moving, adjacent activities would be halted until the authorized biologist is able to move it out of harm's way.</p> <p>23h Any time a vehicle is parked, the ground around and under the vehicle shall be inspected for desert tortoises before the vehicle is moved. If a desert tortoise is observed, it shall be left to move on its own. If this does not occur within 15 minutes, the authorized biologist shall remove and relocate the tortoise.</p> <p>23i All construction and maintenance activities in desert tortoise habitat shall be conducted between dawn and dusk.</p> <p>23j Within potential desert tortoise habitat areas, vehicles shall not exceed 25 miles per hour on access roads during the period of highest desert tortoise activity (March 1 through October 31).</p> <p>23k Tower foundations or other excavations that pose a potential to entrap or injure tortoise shall be inspected on a regular basis until the foundation or other structure is in place. Excavations also will include an escape ramp where appropriate.</p>

	<p>23l A desert tortoise education program will be presented to all personnel who will be onsite at any time, including but not limited to contractors, contractors' employees, supervisors, inspectors, and subcontractors. This program will be presented in English and Spanish, if appropriate, and contain information concerning the biology and distribution of the desert tortoise and other sensitive species, its legal status and occurrence in the proposed Project area, the definition of "take" and associated penalties, the terms and conditions of this biological opinion, measures designed to minimize the effects of construction activities, the means by which employees can facilitate this process, and reporting requirements to be implemented when tortoises are encountered or in cases of non-compliance with the Biological Opinion. The name of each individual trained will be recorded on a sign-in sheet.</p> <p>23m A litter-control program will be implemented to reduce the attractiveness of the area to opportunistic predators such as desert kit fox, coyotes, and common ravens. Trash and food items will be disposed of properly in predator-proof containers with re-sealing lids. Trash containers will be emptied, and construction waste will be removed daily from the Project area and disposed of in an approved landfill.</p> <p>23n LADWP shall report any observations of raven predation on desert tortoises in the Project area to CDFG and USFWS.</p> <p>23o Temporary tortoise-proof fencing will be installed on all areas of known tortoise habitat boundaries to ensure impacts are minimized to the maximum extent possible. An initial tortoise clearance of the fence line will be conducted before fence construction.</p> <ol style="list-style-type: none"> 1) Temporary fencing should consist of 1-inch mesh or 1-inch horizontal by 2-inch vertical mesh (hardware, cloth or plastic) and be installed flush with the ground and extend at least 18 inches above-ground. Temporary tortoise-proof fencing should not be buried. In areas of high rodent activity where plastic mesh is used, temporary fencing may need more frequent monitoring to ensure no breaches exist.
BIO-24	<p><i>Protect arroyo toad and California red-legged frog.</i></p> <p>24a LADWP shall conduct USFWS-approved protocol surveys for arroyo toads and California red-legged frogs at all locations containing suitable habitat near the proposed construction sites within two years before the start of construction.</p> <p>24b If arroyo toads are detected, further surveys within the area will not be required and the avoidance measures detailed below will be followed. If no arroyo toads are detected, habitat assessments will be performed on a yearly basis to determine if the area continues to provide suitable habitat; if an area continues to provide suitable habitat, surveys will be repeated every two years until construction is completed. For all areas in which this species has been documented, LADWP shall develop and implement a monitoring plan that includes the following measures in consultation with the USFWS and USFS.</p> <ol style="list-style-type: none"> 1) LADWP shall retain a qualified biologist with demonstrated expertise with arroyo toads to monitor all construction activities in occupied arroyo toad habitat and assist LADWP in the implementation of the monitoring program. The résumés of the proposed biologists will be provided to the USFS for concurrence. This biologist will be referred to as the authorized biologist hereafter. The authorized biologist will be present during all activities immediately adjacent to or within habitat that supports populations of arroyo toad. 2) All trash that may attract predators of the arroyo toad will be removed from work sites or completely secured at the end of each work day. Before the onset of any construction activities, LADWP shall meet on-site with staff from the USFS and the authorized biologist. LADWP shall provide information on the general location of construction activities within habitat of the arroyo toad and the actions taken to reduce impacts to this species. Because arroyo toads may occur in various locations during different seasons of the year, LADWP, USFS, USFWS, and authorized biologists will, at this preliminary meeting, determine the seasons when specific construction activities would have the least adverse effect on arroyo toads. 3) Any arroyo toads found during clearance surveys shall be reported to the USFWS and the USFS immediately. Clearance surveys shall occur on a daily basis in areas that contain suitable habitat. 4) If the authorized biologist determines that Project activities are disturbing the species, they shall notify the construction manager, and the construction manager, in consultation with the biologist, will have the authority to halt all activities until appropriate corrective measures have been completed. 5) To ensure that diseases are not conveyed between work sites by the authorized biologist or his or her assistants, the fieldwork code of practice developed by the Declining Amphibian Populations Task Force will be followed at all times. 6) LADWP will avoid ground disturbing activities (e.g., grading, stream crossing upgrades, parking) along access roads within a 1.0 mi (1.6 km) buffer of occupied stream habitat for arroyo toads during the activity period for arroyo toads (March through November). This date and buffer may be modified based on the existing temperature regime and habitat conditions, with Angeles National Forest approval.

- 7) LADWP will limit use of the access roads in areas known to support arroyo toad within a 1.0-mile (1.6 km) buffer to daylight hours only during the activity period for arroyo toads (generally March through November). Use of these roadways during rain events will not occur during the activity period for arroyo toads. Vehicle speeds will be limited to 15 mph (24 kph), and no parking or loitering will occur along the access roads. A qualified biologist must permanently remove from within the Project area any individuals of exotic species, such as bullfrogs, crayfish, and centrarchid fishes, to the maximum extent possible and ensure that activities are in compliance with the California Fish and Game Code.
 - 8) No stockpiles of materials will occur in areas occupied by arroyo toads.
 - 9) Any spills of fluids that may be hazardous to aquatic fauna (gasoline, hydraulic fluid, motor oil, etc.) in areas that may contain arroyo toads will be reported to the USFS and USFWS within one hour.
 - 10) For each ac/ha of arroyo toad occupied habitat that is permanently impacted on the Angeles National Forest, five ac/ha of arroyo toad occupied habitat will be conserved in the vicinity of the impacted habitat (i.e., impacts will be offset at a habitat ratio as required by the final Biological Opinion).
- 24c** If California red-legged frogs are detected, further surveys within the area will not be required and the avoidance measures detailed below will be followed. If no California red-legged frogs are detected, habitat assessments will be performed on a yearly basis to determine if the area continues to provide suitable habitat; if an area continues to provide suitable habitat, surveys will be repeated every two years until construction is completed. For all areas in which this species has been documented, LADWP shall develop and implement a monitoring plan that includes the following measures in consultation with the USFWS and USFS.
- 1) All trash that may attract predators of red-legged frogs will be removed from work sites or completely secured at the end of each work day.
 - 2) Between November 1 and March 31, no work will be authorized within one mile of occupied habitat, and no vehicular crossings at wet fords of those channels will be authorized. The one-mile buffer distance may be reduced based on the topography of the site, with the approval of the USFWS and the USFS.
 - 3) If and as required by USFWS, between April 1 and October 31, no work will be authorized within 0.5 mile of occupied habitat, and no vehicular crossings at wet fords of those channels will be authorized.
 - 4) If and as required by USFWS, from November 1 thru March 31, overflights will be restricted to a minimum altitude of 1,000 feet (305 m) from the stream bottom within 1.0 mile (1.6 km) of a California red-legged frog occupied stream.
 - 5) Before the onset of any construction activities, LADWP shall meet on-site with staff from the USFWS and the authorized biologist. The authorized biologist shall hold a current red-legged frog permit from USFWS. LADWP shall provide information on the general location of construction activities within habitat of the red-legged frog and the actions taken to reduce impacts to this species. Because red-legged frogs may occur in various locations during different seasons of the year, LADWP, USFWS, USFS, and authorized biologists will, at this preliminary meeting, determine the seasons when specific construction activities would have the least adverse effect on red-legged frogs.
 - 6) Where construction would occur in habitat where red-legged frogs are widely distributed, work areas will be fenced in a manner that prevents equipment and vehicles from straying from the designated work area into adjacent habitat. The authorized biologist will assist in determining the boundaries of the area to be fenced in consultation with the LADWP and the responsible agency(s). All workers will be advised that equipment and vehicles must remain within the fenced work areas.
 - 7) The authorized biologist will direct the installation of the fence and conduct a minimum of three nocturnal surveys to move any red-legged frogs from within the fenced area to suitable habitat outside of the fence. If red-legged frogs are observed on the final survey or during subsequent checks, the authorized biologist will conduct additional nocturnal surveys if he or she determines that they are necessary in concurrence with the USFWS/CDFG/USFS.
 - 8) Fencing to exclude red-legged frogs will be at least 24 inches in height.
 - 9) Construction activities that may occur near breeding pools or other areas where large numbers of red-legged frogs may congregate will be conducted during times of the year when individuals have dispersed from these areas (i.e., winter) or the species is dormant, unless otherwise authorized by the USFS and USFWS. The authorized biologist will assist LADWP in scheduling its work activities accordingly.
 - 10) If red-legged frogs are found within an area that has been fenced to exclude red-legged frogs, activities will cease until the authorized biologist moves the red-legged frogs.
 - 11) If red-legged frogs are found in a construction area where fencing was deemed unnecessary, work will cease until the authorized biologist moves the red-legged frogs. The authorized biologist in consultation with USFWS/CDFG/USFS will then determine whether additional surveys or fencing are needed.
 - 12) Any red-legged frogs found during clearance surveys shall be reported to the USFWS and the USFS immediately. Clearance surveys shall occur on a daily basis in the work area.

	<p>13) If the authorized biologist determines that Project activities are disturbing the species, they shall notify the construction manager, and the construction manager, in consultation with the biologist, will have the authority to halt all activities until appropriate corrective measures have been completed.</p> <p>14) LADWP shall restrict work to daylight hours, except during an emergency, to avoid nighttime activities when red-legged frogs may be present on the access road. Traffic speed should be maintained at 15 mph or less in the work area.</p> <p>15) A qualified biologist must permanently remove from within the Project area any individuals of exotic species, such as bullfrogs, crayfish, and centrarchid fishes, to the maximum extent possible, and ensure that activities are in compliance with the California Fish and Game Code.</p> <p>16) No stockpiles of materials will occur in areas occupied by California red-legged frogs.</p> <p>17) To ensure that diseases are not conveyed between work sites by the authorized biologist or his or her assistants, the fieldwork code of practice developed by the Declining Amphibian Populations Task Force will be followed at all times.</p> <p>18) Any spills of fluids that may be hazardous to aquatic fauna (gasoline, hydraulic fluid, motor oil, etc.) in areas that may contain California red-legged frogs will be reported to the USFS and the USFWS within one hour.</p>
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5.0 EXISTING ENVIRONMENT

The physiography of the Project area in the Los Angeles and Kern County regions from north to south is the flat Antelope Valley gradually rising in elevation (Northern region) and giving way to the foothills of the Angeles National Forest (Central region). Continuing south, the foothills gradually give way to the City of Santa Clarita (Southern region). Drainages originating from the foothills of the ANF have carried rock detritus and water to the Santa Clarita area. This has produced several riparian areas, which support a rich, varied, and unique ecosystem. The diversity and distribution of biological resources within the study corridor are a function of the regional climate, soils, and topography. For most of the region, the availability of water or soil moisture is the critical factor that determines the broad distribution of vegetation types and associated wildlife species. To provide baseline conditions for the dominant soil type, water and habitat characteristics the biological study was divided to three ecotype regions (Northern, Central and Southern). The Northern and Southern regions of the Project do not occur within the ANF at all and are not discussed further. The Central region of the BRRTTP encompasses the southern ends of Alternatives 1, 2, 2a, and 3, as well as Segment J (new 230 kV circuit between Haskell Canyon and the Castaic Power Plant), and is discussed below in greater detail.

5.1 CENTRAL REGION – ANF BOUNDARIES

Alternatives 1, 2, 2a, 3, the new 230 kV circuit (Segment J), and reconductoring component within the ANF are located in steep, mountainous terrain of the eastern Transverse Ranges, including the northern San Gabriel and Liebre Mountains. The ecotype is considered the Northern Transverse Range and is characterized by broad fault blocks and alleviated lowlands, and is dissected by granitic uplands (Table 6). The eco-region is characterized by its high elevation setting and the influence from upper level weather patterns in the west, decreasing to mid-elevation ranges along the eastern section. Along the southern end of the eco-region, the high-elevation mountain range transcends into the foothills of the Santa Clarita Valley. Long periods of hot, dry weather are not uncommon at the high elevations of the Northern Transverse Ranges. Precipitation ranges from 6 to 40 inches annually throughout the eco-region.

TABLE 6. SOIL TYPES PRESENT IN CENTRAL REGION

Segment	Soil Series	Drainage Class	Series Soil pH
Alternative 1	Cortina	Excessively drained	Slightly acid
Alternative 1	Hanford	Well drained	Slightly alkaline
Alternative 1	Metz	Somewhat excessively drained	Moderately alkaline
Alternative 1	Millsholm	Well drained	Neutral to slightly acid

Segment	Soil Series	Drainage Class	Series Soil pH
Alternative 1	Mollic Haploxeralfs	Well drained	Extremely acid
Alternative 1	Osito family	Well drained	Neutral to slightly acid
Alternative 1	Rock outcrop	N/A	Neutral
Alternative 1	Saugus	Well drained	Slightly acid
Alternative 1	Trigo family	Somewhat excessively drained	Slightly acid
Alternative 2/ Reconductor	Amargosa	Excessively drained	Neutral
Alternative 2/ Reconductor	Chino	Excessively drained	Moderately alkaline
Alternative 2/ Reconductor	Exchequer family	Somewhat excessively drained	Slightly acid
Alternative 2/ Reconductor	Greenfield	Well drained	Neutral
Alternative 2/ Reconductor	Hanford	Well drained	Slightly acid
Alternative 2/ Reconductor	Lodo family	Somewhat excessively drained	Slightly acid
Alternative 2/ Reconductor	Millsholm	Well drained	Slightly acid
Alternative 2/ Reconductor	Mollic Haploxeralfs	Well drained	Extremely acid
Alternative 2/ Reconductor	Ramona	Well drained	Moderately acid
Alternative 2/ Reconductor	Rock outcrop	N/A	Neutral
Alternative 2/ Reconductor	San Andreas family	Well drained	Moderately acid
Alternative 2/ Reconductor	Trigo family	Somewhat excessively drained	Slightly acid
Alternative 2/ Reconductor	Tujunga family	Excessively drained	Slightly acid
Alternative 2/ Reconductor	Vista	Well drained	Neutral
Alternative 2/ Reconductor	Yolo	Well drained	Neutral
Alternative 2a	Amargosa	Excessively drained	Neutral
Alternative 2a	Exchequer family	Somewhat excessively drained	Slightly acid
Alternative 2a	San Andreas family	Well drained	Moderately acid
Alternative 2a	Trigo family	Somewhat excessively drained	Slightly acid
Alternative 3	Amargosa	Excessively drained	Neutral
Alternative 3	Anaverde	Well drained	Neutral
Alternative 3	Castaic	Well drained	Slightly acid
Alternative 3	Cortina	Excessively drained	Slightly acid
Alternative 3	Exchequer family	Somewhat excessively drained	Slightly acid
Alternative 3	Godde	Well drained	Slightly acid
Alternative 3	Greenfield	Well drained	Neutral
Alternative 3	Hanford	Well drained	Slightly acid
Alternative 3	Lodo family	Somewhat excessively drained	Slightly acid
Alternative 3	Metz	Somewhat excessively drained	Moderately alkaline
Alternative 3	Mocho	Well drained	Moderately alkaline
Alternative 3	Saugus	Well drained	Neutral to slightly acid
Alternative 3	Vista	Well drained	Neutral
Alternative 3	Wyman	Well drained	Neutral
Alternative 3	Yolo	Well drained	Neutral
New 230 kV Circuit	Castaic	Well drained	Slightly acid
New 230 kV Circuit	Hanford	Well drained	Slightly acid
New 230 kV Circuit	Metz	Somewhat excessively drained	Moderately alkaline
New 230 kV Circuit	Millsholm	Well drained	Slightly acid
New 230 kV Circuit	Mollic Haploxeralfs	Well drained	Extremely acid
New 230 kV Circuit	Rock outcrop	N/A	Neutral
New 230 kV Circuit	Saugus	Well drained	Neutral to slightly acid
New 230 kV Circuit	Zamora	Well drained	Neutral

Within the central eco-region boundary, the vegetation composition is predominantly shrubs, approximately 137,000 acres. The eco-region is dominated by mixed chaparral series with a sparse mixture of deciduous and pine forests, decreasing in density as the elevation drops into the Santa Clarita Valley and Los Angeles Basin. Predominant plant species include *Juniperus californica* (California juniper), *Pinus coulteri* (Coulter pine), *Pinus sabiniana* (Gray pine), *Quercus* spp. (Oak species), *Ceanothus* spp. (Sugar Brush), *Arctostaphylos glauca* (Big Berry Manzanita), and *Adenostoma*

fasciculatum (Chamise). There are three major drainages and several small drainages that originate from the foothills of the Angeles National Forest and spread over the northwestern Los Angeles County region. The San Francisquito Canyon Creek, a minor drainage in the area, has several small distributaries. A second drainage, originating from Bouquet Reservoir, is Bouquet Canyon Creek. The third drainage, Santa Clara River, has several small distributaries, including Mint Canyon Creek, Rowher Canyon Creek, and Aqua Dulce Canyon Creek. The Santa Clara River also has two minor distributaries, San Francisquito Canyon Creek and Bouquet Canyon Creek. Many reaches of these natural and modified stream channels have the ability to support riparian areas and function as wildlife corridors.

Wildfires are an integral part in the biodiversity of plant and animals ecosystems in Southern California (Zedler 1995). Several fires have occurred in the Central region and the largest of the burned areas within the Project area occurred during the 2009 Station Fire, which burned 161,000 acres, 154,000 acres of which were within Forest Service lands. Within the last fifty years, there have been nine fires that have burned over 10,000 acres within the Project area. Another recent large wildfire was the 2007 Buckweed Fire, which burned approximately 40,000 acres east of Santa Clarita and to the north of State Route 14.

The chaparral-shrubland community is highly tolerant to the disturbance of fire and will generally dominate a burned site several decades after a fire. The ability for chaparral plant communities to recover from fire is highly favorable, contributing to plant succession by influencing the germination of seeds and the stimulation of spouting seedlings. Early successional plant species, including native and non-native grasses and perennials, will generally dominate a burned site for the first several years after a fire. However, negative impacts have been associated with the increase in frequency of Southern California's large fires. Changes in dominant vegetation communities dramatically affect the habitat for plant and animal species. For example, the coastal California gnatcatcher is dependent primarily on coastal sage scrub vegetation. If this vegetation is burned too many times, it may convert to non-native grassland or a disturbed habitat that would preclude its use by the gnatcatcher. The introduction of non-native species in recent burn areas significantly affects forest and rangeland ecosystems. Non-native invasive grass species such as Cheat Grass (*Bromus tectorum*) favors disturbed areas and establishes itself strongly, out-competing native plant habitat. These introduced annuals cure early and remain flammable during a long fire season, thereby increasing the frequency of wildfire because of the abundance of early cured fine fuels (POWER 2010d). Fires often cause a short-term increase in productivity, availability, or nutrient content of forage. These changes can contribute to substantial increases in herbivore populations, but potential increases are moderated by animals' ability to thrive in the altered, often simplified, structure of the post-fire environment. Large, high-intensity fires that denude the landscape of many shrubs and trees reduce habitat quality for species that require dense cover and improve it for species that prefer open sites. Thus, habitat changes (e.g., alteration of cover protection and available food resources) occurring from a wildfire could be more detrimental to faunal populations and communities than fire itself. In many desert and semi-desert habitats, the history of wildfire occurrences is fairly infrequent because of sparse fuels.

6.0 EFFECTS OF PROPOSED PROJECT ON SELECTED MIS

This section discusses known information about MIS occurrence within or near the Project area, population trends over time, the amount of potentially available and affected suitable habitat, and a discussion on the effects of implementing the proposed Project. Detailed information on MIS for the ANF is documented in the ANF MIS Report (USFS 2008).

6.1 DIRECT AND INDIRECT IMPACTS SUMMARY

Both direct and indirect impacts are expected to occur to vegetation and wildlife. Direct impacts are defined as those that occur at the same time and place as BRRTP or the surrounding projects mentioned in Section 6.2. Indirect impacts are defined as those which could be caused by BRRTP or surrounding projects, but which would occur at a later time or occur at a distance farther removed from the direct construction corridor. While all of the direct and indirect impacts below could possibly occur due to

BR RTP, not all may necessarily apply to each project listed in the next section. However, any common direct or indirect impacts between BR RTP and any of the listed projects would exert cumulative effects of varying degrees on certain species or groups of species.

Direct Impacts

- Habitat loss, fragmentation, or degradation (short-term and long-term);
- Direct injury or mortality;
- Disturbance of management indicator species (dust deposition on or crushing of plants, disturbance of an animal's daily activities or natural history); and
- Dispersal of local wildlife (including mortality of young for nesting wildlife).

Indirect Impacts

- Habitat degradation (spread of non-native plant species, soil compaction);
- Indirect injury or mortality (dispersal leading to increased predation risk and/or competition, ingestion of construction debris);
- Reduction in water quality due to insufficient erosion control; and
- Avian collisions and/or electrocutions.

6.2 CUMULATIVE EFFECTS FOR MIS

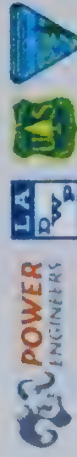
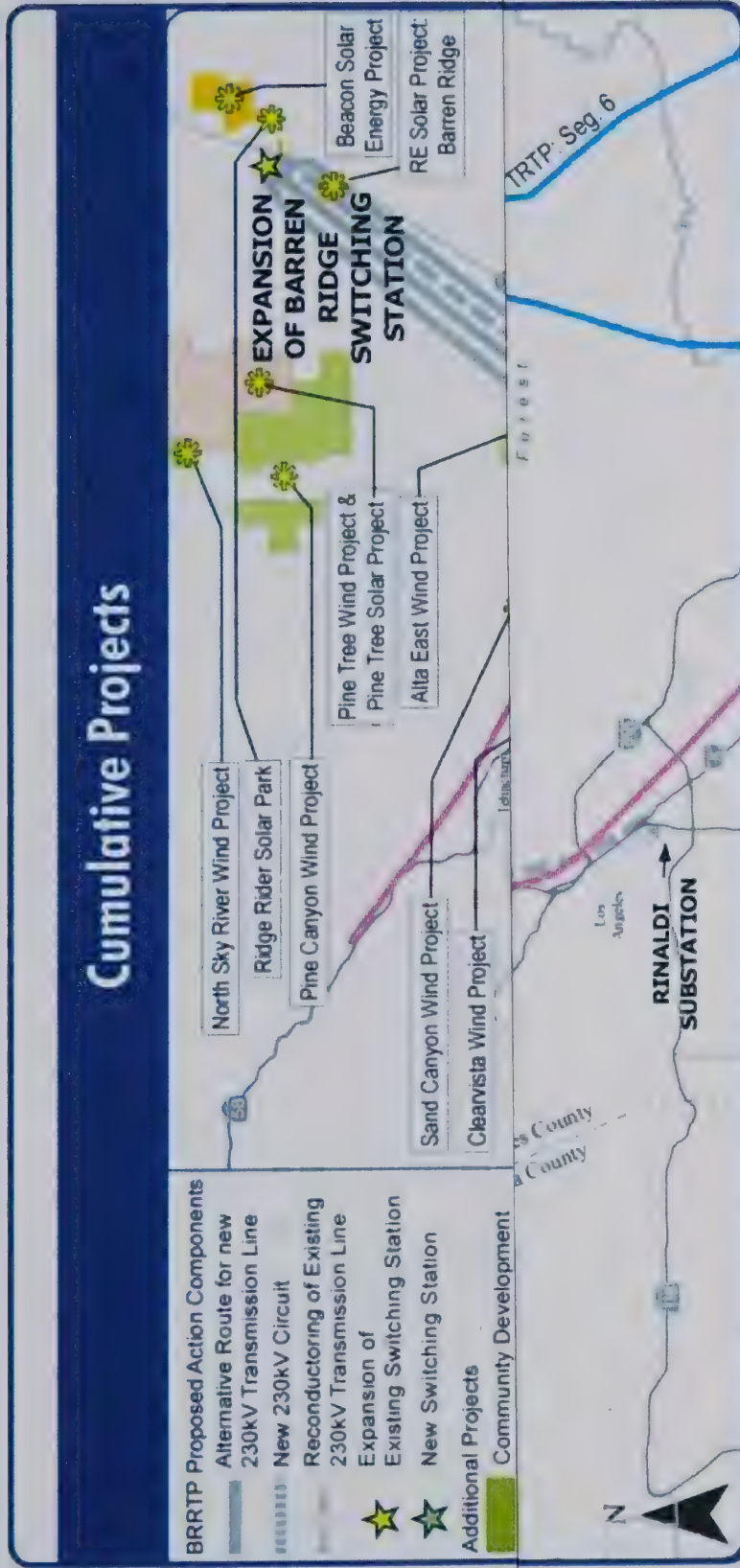
For analysis of cumulative effects, the action area is defined as the proposed corridor within the Angeles National Forest, on each Alternative for each Project component, along with a five-mile boundary of projects that may occur in the vicinity of the BR RTP. Additionally, any other major projects that may affect individual species, such as Southern California Edison's (SCE's) Tehachapi Renewable Transmission Project, were included. Other activities that occur within the action area include the use of Forest Service trails and trailheads, resource management activities, fuels reduction around facilities and structures, and use of Forest lands for aqueducts, access roads, and existing transmission lines. In addition, the population growth of Los Angeles County has been accompanied by an increase in the amount of recreational use and residential development in and around the ANF, which is expected to have negative impacts on habitat and sustainability for the MIS.

The cumulative effect of all of these activities is a permanent reduction in the quantity and quality of habitat for MIS within the Project area. However, based on existing information about MIS populations and the effects of Forest management activities on these species, at this time the MIS addressed in this document are not considered to be near thresholds for sustainability.

6.2.1 Past, Present and Reasonable Foreseeable Actions

The Cumulative Projects map (Figure 7) illustrates the locations of the major cumulative projects in the BR RTP area. The list of projects include: 1) Electricity Transmission Projects; 2) Power Generation Projects; 3) Transportation and Public Facilities Projects; 4) Community Development Projects; 5) Recreation Projects; 6) Maintenance/Landscaping Projects; and 7) Local Development Projects. However, because most of these projects are not on the ANF, they are not considered for analysis.

FIGURE 7. CUMULATIVE PROJECTS



BARREN RIDGE RENEWABLE TRANSMISSION PROJECT

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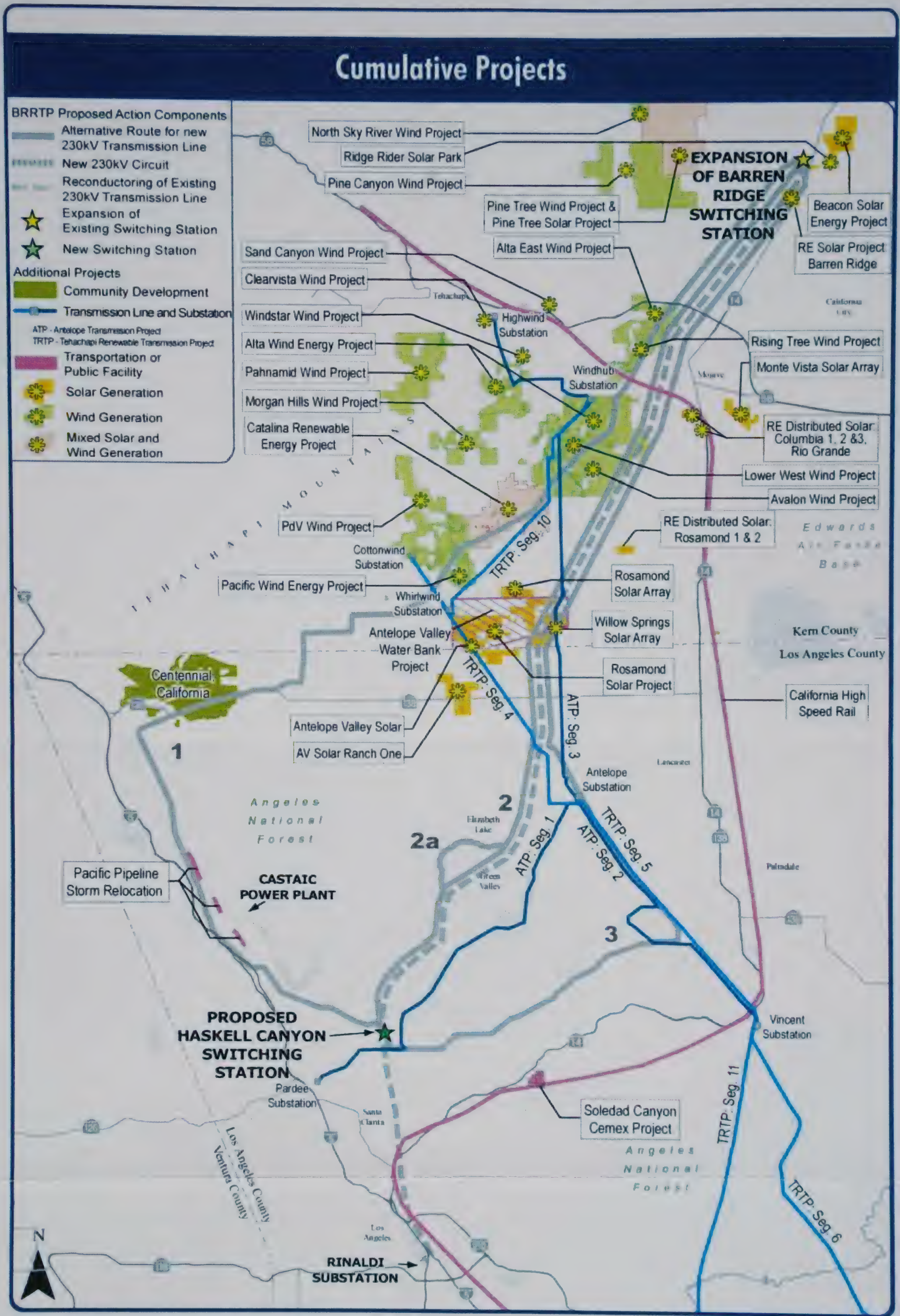
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BARREN RIDGE RENEWABLE TRANSMISSION PROJECT



Numerous energy infrastructure, wind, and solar generation projects are in various stages of planning and development within the Project vicinity. Below are brief descriptions of projects that occur in the BR RTP vicinity of the ANF or could have cumulative effects on MIS species affected by BR RTP within the ANF. Because many of these are not considered to be “major” projects, they are not included on Figure 7.

Transmission Projects

Antelope-Pardee 500 kV Transmission Project – Construction of SCE’s proposed Antelope-Pardee 500 kV Transmission Project is underway and will proceed in three sequential segments. Segment 1 construction and energization has been completed. Construction of the remaining two segments is expected to be completed in 2010.

Tehachapi Renewable Transmission Project (TRTP) – SCE is proposing to construct the TRTP, which would involve new and upgraded transmission infrastructure along approximately 173 miles of new and existing rights-of-way in southern Kern County, portions of Los Angeles County including the ANF, and the southwestern portion of San Bernardino County. Stated objectives for the project include providing the electrical facilities necessary to integrate levels of wind generation in excess of 700 MW and up to approximately 4,500 MW in the Tehachapi Wind Resource Area. The environmental review process for the project is currently underway, and construction is estimated to be completed in 2013. The project is composed of Segments 4 through 11; however, only Segments 6 and 11 are located within the Angeles National Forest.

Transportation and Public Facilities Projects

Pacific Pipeline Storm Relocation Project and Access Road Repairs – Pacific Pipeline is proposing to relocate several miles of crude oil pipeline to more stable ground within the ANF following heavy storms in 2005.

Maintenance/Landscaping Projects

Bee Canyon Sag Pipe Cement Lining Project – This LADWP Operations and Maintenance (O&M) project involves the patching and coating of the interior of the Bee Canyon Sag Pipe. Originally constructed circa 1910, the current interior lining has been determined to be insufficient and outdated with current standards of safety and quality.

City Highline Road Grading – This LADWP O&M project involved the grading of approximately five miles of City Highline Motorway Fire Road in spring 2009 without the approval of the ANF. This resulted in road grading through 23 RCAs and on a portion of road running perpendicular and immediately adjacent to water. In addition, ten live oak trees were trimmed during the process.

Elizabeth Tunnel Emergency Repair Project – This LADWP O&M project involved an emergency repair and sediment removal at the South Portal of the Elizabeth Tunnel. The layer of sediment that normally covers the tunnel entrance was found to have been washed off and had accumulated in front of the entrance. The sediment was removed and placed back against the tunnel entrance.

Livestock Grazing Allotments – This ANF project involved the closing of selected grazing allotments within the ANF. There are six grazing allotments that were historically grazed but have not been used for this purpose for several years, the longest being since 1993 and the most recent since 2002. The allotments included a total of 50,854 acres of NFS lands on the ANF.

Santa Clara River Watershed Invasive Plant Treatment Project – This project proposal by the ANF is located in the Santa Clara River Watershed entirely on ANF grounds. It includes approximately 262,000 acres and 744 miles of stream channels and involves the proposed eradication, control, containment,

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and/or suppression of existing and new infestations of non-native plant species within the Santa Clara River Watershed. Proposed treatment methods involve biological control, manual/mechanical control, burning, and herbicide.

7.0 EFFECT ANALYSIS

7.1 MULE DEER (*ODOCOILEUS HEMIONUS*)

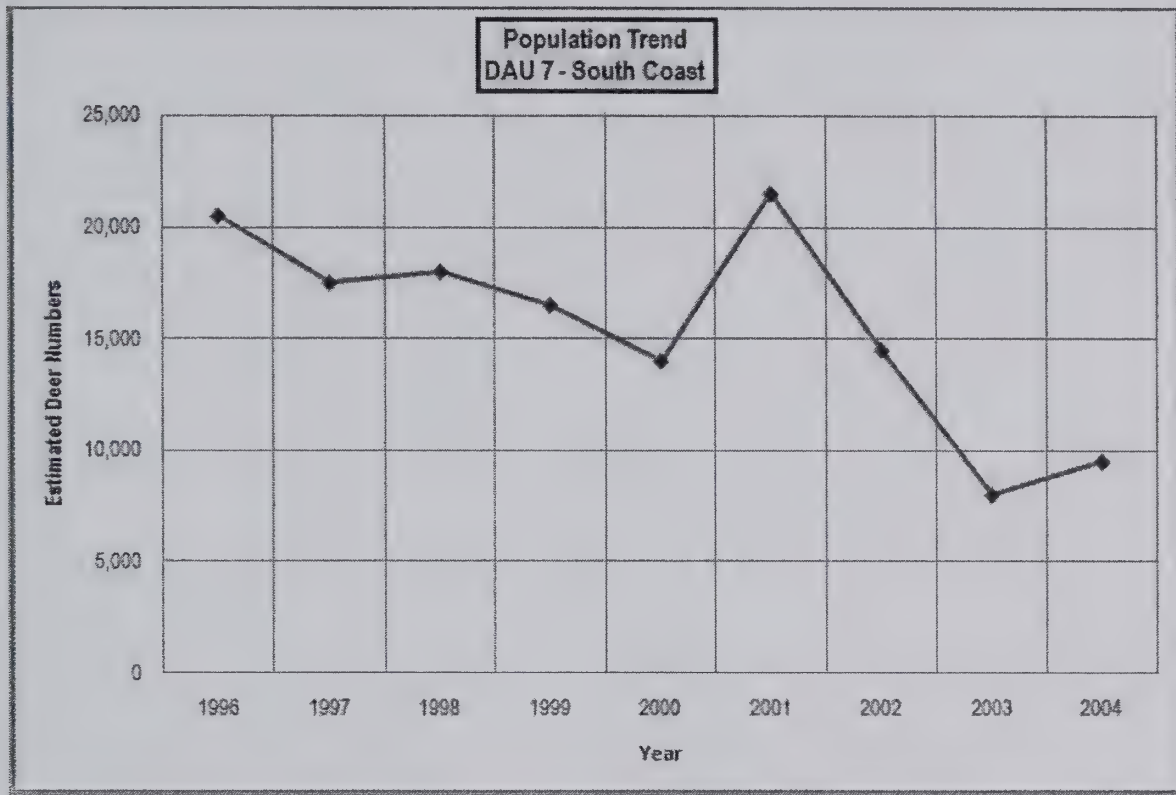
7.1.1 Habitat/Species Relationship

The mule deer was selected as an MIS for forest health according to vegetation, road, and recreation management. In addition, mule deer can be used to evaluate the effects of the different strategies in the LMP alternatives for vegetation and road management (USFS 2005b, Volume 1, pages 24 – 59; Volume 2, Page 77). They are associated with all habitat types and are affected by roads and recreation along with management that modifies vegetation diversity and age class mosaics. According to the Forest Service FEIS (USFS 2005b, Volume 2, page 77), the objective for mule deer on the ANF is to have well-distributed and stable or increasing populations. Trends in mule deer populations are monitored through cooperation with the CDFG in their ongoing surveys. Changes in mule deer abundance are partially due to Forest Service actions and management. However, because mule deer are affected by many different interacting relationships, mule deer abundance is related to deer herd size, hunting, human actions and developments, and vegetation management on private and public wildlands. Because maintaining suitable mule deer habitat is an important management objective for the National Forests of Southern California, it is important for the Forest Service to engage in interagency monitoring efforts of deer population abundance and habitat condition.

The area within the ANF that contains the Project area is located in Deer Hunt Zone D-11, which is part of Deer Assessment Unit (DAU)-7 South Coast. Overall, the DAU-7 deer population is considered to be decreasing by the CDFG (USFS 2008).

Mule deer in the Project area are part of the Los Angeles Deer Herd, which includes individuals throughout the San Gabriel Mountains of Los Angeles County. Population estimates were made for the San Bernardino Mountains and the Los Angeles Mountain deer herds in 2004 by the CDFG, which estimated the Zone D-11 2004 pre-hunting season population to be 4,180 and the 2007 pre-hunting season population to be 6,440 (USFS 2008). The deer population in Zone D-11 is considered stable to slightly declining, and far below population levels recorded in the late 1960s and 1970s (USFS 2008). Figure 8 illustrates the population trend for the deer in DAU-7 from 1996-2004, showing that even within this time period there appeared to be a pronounced drop in the South Coast mule deer population. This long-term population decline appears to be the case with most deer herds in California and other western states. Generally speaking, long-term population declines have been the result of land management practices that have mostly avoided fires, resulting in changes toward more mature and less diverse habitats and reducing the amount of available mule deer habitat. Occasional short-term fluctuations in deer populations are typically the result of weather events that influence forage production (USFS 2008).

FIGURE 8. MULE DEER DAU-7 POPULATION TREND, 1996-2004



Source: USFS 2008

The subspecies of deer in Zone D-11 is the California mule deer, which are considered resident deer for this area. That is, their movements are predominantly elevational and they do not make long seasonal migrations (USFS 2008). The deer in Zone D-11 generally move to higher elevations in late spring, where they remain until heavy fall storms force them downslope again. An estimate of annual deer losses in the ANF can be made from the reported deer hunting kill records for Zone D-11 provided in Table 7 below. It should be noted that these numbers are reported kills and that estimates of actual deer kills may be higher. Furthermore, while these numbers represent the reported annual deer kills for Zone D-11, the actual proposed BR RTP area only includes a small section of this zone in the Santa Clara/Mojave Rivers Ranger District, and deer populations and kills within this area may be much less than the numbers reported for the entire zone. Although exact locations of deer kills are unknown, areas that CDFG considers to be "popular and productive" for deer hunting in the Project area's vicinity include Bouquet Canyon, Drinkwater Flat, Castaic Lake, and Lake Elizabeth (CDFG 2010a). Of these, only Drinkwater Flat is within the ROW on Alternative 2, whereas Castaic Lake is located immediately north of the ROW for the reconductoring of the existing BR-RIN line. Bouquet Canyon is approximately two miles east of Alternative 2 at its closest point, while Lake Elizabeth is located approximately 0.6 mile west of Alternative 2. Areas that CDFG considers popular and productive for mule deer that are located slightly farther from the Project's ROWs include Liebre Mountain, Necktie Basin, and Sierra Pelona (CDFG 2010a). Liebre Mountain is located approximately 4.5 miles south and east of Alternative 1, Necktie Basin is located approximately four miles north of the new circuit area, and Sierra Pelona is located approximately 2.5 miles north of Alternative 3.

TABLE 7. REPORTED DEER KILL RECORDS FOR ZONE D-11

YEAR	TOTAL REPORTED DEER KILL	TOTAL REPORTED DEER KILL ON PUBLIC LANDS
1999	161	140
2000	234	203
2001	195	169
2002	46	21
2003	151	125
2004	136	112
2005	220	193
2006	230	205
2007	151	137
2008	194	175
2009	117	97

From CDFG Deer Harvest Data, 1999 – 2009. Available in annual reports at <http://www.dfg.ca.gov/wildlife/hunting/deer/deerhunt.html>

Note: it is difficult to assess the amount of deer kills within the Project area itself, since these records focus on the entire hunt zone and are based only on reported kills.

Currently, mule deer are widespread on the ANF and are assumed to be present wherever openings and cover are interspersed with sources of water. Mule deer range and habitat include coniferous forest, foothill woodland, shrubland, grassland, agricultural fields, and suburban environments. Mule deer prefer a mosaic of vegetation with interspersions of dense shrub or trees among herbaceous and riparian areas. Edge habitat and vegetation ecotones are important components for optimal deer habitat. Dense shrub and trees provide hiding cover from disturbance and predation. Shrub and tree canopies are also utilized for thermal cover during the winter and temperature regulation during summer months.

In order to maintain or improve habitat conditions to sustain healthy deer populations, the national forests are working to retain oak canopy cover in oak/grasslands, close unauthorized roads and control unrestricted vehicle use, restore meadows and riparian areas, and manage chaparral areas near water sources to create irregular shapes to maximize cover and forage opportunities (USFS 2005b, Volume 1, page 124). Fire and fuel management are the main tools intended to implement these objectives, as fires allow for the replenishment and growth of young foraging habitat that is preferred by mule deer (Quinn 1990, USFS 2008). Natural wildfires help to produce early successional forage—ideal for deer—for several years, which will eventually decline in forage quality before burning again. In chaparral habitats, such as that within much of the BRTP area, mule deer can most easily feed on vegetation that has burned within the last ten years, after which it begins to decline in quality (USFS 2008). However, prescribed burns are influenced by surrounding human activities, as human recreation and development can reduce the extent or remove the possibility of thinning or burning older vegetation, thereby reducing the quality of mule deer habitat in a given area. This has been the case with many forested areas, where absence of fire has resulted in patches of dense trees that reduce the amount of shrubs, herbaceous plants, and even oaks, all of which are used by mule deer as food sources. Oaks in particular are used by mule deer due to their mast, or acorn, production (USFS 2008). As such, mule deer habitat in many areas has declined.

Suitable habitat is composed of four distinctly different elements, the first of which is fawning habitat. Ranges of fawn and doe groups are small, varying from 0.4 to 1.9 miles depending upon water availability and topography. In addition to close proximity to water, fawning areas are characterized by low shrubs or small trees suitable for protection of the doe as she gives birth, and dense shrub thickets for sheltering the fawn. Fawning areas must be interspersed with forage, hiding cover, and thermal cover for the doe. Rutting season occurs in autumn, and one to two fawns are born from early April to midsummer, varying geographically, with peak fawning from late April through mid-June. Mesic areas such as riparian

and meadow habitats are sought by mule deer because of their roles as critical fawning areas (Quinn 1990, USFS 2008). These habitats are typically very sensitive to disturbance from recreational use, particularly disturbance within 0.6 mile, which is the typical distance that mule deer prefer to be from a water source (USFS 2008, Aspen 2009). While official public roads and campgrounds have been closed in some areas on forest lands, which has benefited mule deer due to the reduction in human disturbance, unauthorized roads are still a major problem in some key fawning areas and key winter ranges. Human development in and around the national forests has also continued to affect mule deer abundance and population numbers due to human activities and harassment by domesticated animals, such as dogs.

The remaining elements of suitable mule deer habitat include foraging, cover, and winter range. Foraging habitat includes brush, shrubs, forbs, grasses, and trees where deer feed most actively at dawn and dusk. Hardwoods, such as oaks, are important for mast production, especially in winter range. Hiding and thermal cover is typically close to the ground and thick enough to camouflage the outline of the deer, without being so dense as to obscure the approach of potential predators, such as mountain lions. Thermal cover is similar and generally thought to be denser, with the additional property of sheltering deer from the elements. Winter range tends to be lower elevation habitats that meet the requirements for forage, hiding, and thermal cover described above. Mule deer migrate seasonally between higher elevation summer range and low elevation winter range. Deer will migrate downslope in winter to areas with less than 18 inches of snow.

The vegetation is highly varied throughout Zone D-11 and includes several desert plant communities, chaparral types, oak woodlands, and riparian series. Because deer will generally respond well to disturbances that enhance brush species that they forage on, riparian areas and areas that have recently burned within the Project area will provide more ideal habitat. Deer are also attracted to acorns, which provide a crucial food source (mast), and patches of oak trees are present within or adjacent to the ROW in several areas, including some instances of scrub oak. However, the proposed BR RTP traverses multiple habitats of which only some, such as those named above, are suitable for actually sustaining mule deer. For instance, portions of the Project area cross areas that have been developed or otherwise degraded by anthropogenic activity, such as the vicinity of Green Valley.

7.1.2 Project-level Effects Analysis Based on Habitat

Key Habitat Factor(s) for the Analysis: Availability of suitable vegetation for fawning, forage and cover in close proximity to water is the most limiting factor for mule deer. The Forest Service FEIS (USFS 2005b, Volume 2, page 77) considers all habitat types as potentially suitable for the mule deer. Therefore, the entire Project area is considered suitable habitat and could potentially be impacted by the Project.

Analysis Area for Project-level Effects Analysis: The analysis area for direct, indirect, and cumulative effects of the BR RTP on mule deer varies according to Project components, which overlap and encompass different vegetation areas. Because the Forest Service FEIS (USFS 2005b, Volume 2, page 77) considers all habitat to be suitable for mule deer, all habitat types are taken into account for disturbance estimates. Total acreage of each Project alternative or component on the ANF is presented in Table 8. These calculations are based on the 500-foot wide corridor and include projected habitat disturbance from construction staging areas and access roads.

TABLE 8. TOTAL MULE DEER HABITAT ACREAGE POTENTIALLY IMPACTED BY EACH BR RTP COMPONENT AND PERCENTAGE OF TOTAL HABITAT ON ANF

	ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 2A	ALTERNATIVE 3	RECONDUCTORING	NEW CIRCUIT
Total Acres of Suitable Mule Deer Habitat within the Analysis Area	965.96	787.30	940.11	221.22	787.68	210.24
Percentage of Total Suitable Mule Deer Habitat on ANF (662,983 acres)	0.15%	0.12%	0.14%	0.03%	0.12%	0.03%
Total Acres of Suitable Mule Deer Habitat Impacted within the Analysis Area*	149.98	112.61	132.89	50.66	122.15	41.24
Percentage Impacted of Total Suitable Mule Deer Habitat on ANF (662,983 acres)	0.02%	0.02%	0.02%	0.01%	0.02%	0.01%

*This acreage is calculated based on the maximum temporary and permanent acreages and represents a "worst-case scenario" of disturbance.

Current Condition of the Key Habitat Factor(s) in the Analysis Area: The percentage of the total ANF that is within each individual Project component is above in Table 8.

7.1.3 Direct and Indirect Effects to Mule Deer

The construction, maintenance and operation of a transmission line would result in both temporary and permanent ground disturbance. Construction of steel lattice towers would create a temporary disturbance that consists of structure work area, pulling and tensioning sites, sleeving and stringing operations, guard structures, material staging sites, and concrete batch plants. Permanent disturbance for steel lattice towers would consist of the structure footprint and foundations, and access roads needed for operations and maintenance activities. The structure footprints would be roughly the same for both flat and mountainous terrain. The logistics of construction in mountainous areas usually requires a greater distance of access roads and would be based on the degree of slope. For transmission line projects, the construction and maintenance of access roads would create the greatest potential for ground disturbing impacts. Within the ANF where the terrain is steep and access is limited, the Forest Service would require that the new double-circuit 230 kV structures be constructed by the use of helicopter. The use of helicopters for the construction of transmission tower structures would eliminate the need for new access roads to structure locations, and would therefore minimize land disturbance associated with crane pads, structure laydown areas, and the trucks and tractors used for delivery of structures to sites. The following sites and ground disturbing construction activities would still be required to construct the new transmission line within the identified helicopter construction areas: portable landing pads, helicopter fly yards/staging areas, tower structure vegetation clearing, guard structures at major crossings, wire stringing sites, pullouts, and temporary access roads.

The variance in disturbance between Project components is mainly a result of differences between currently existing road access and the length of the transmission line corridor. Implementing the Project and disturbing patches of vegetation could potentially alter the intensity and frequency of wildfires, which greatly influences foraging habitat by providing early successional forage, which is easy for deer to feed upon. Most of the proposed ROW in the ANF parallels existing transmission lines and would utilize existing access and spur roads.

Disturbance of does and fawns would depend largely on Project timing, route selection, and potential use of helicopter construction. All Project components would cross multiple riparian zones that possess high fawning potential, particularly in areas with numerous oak trees. Construction activities would produce

visual activity and noise above 65 decibels (normal human voice is rated at 65 decibels), which could displace deer to adjacent areas outside the area of potential effect. Anthropogenic-generated disturbance has greater potential for adverse effects on non-migratory deer during winter months, when they are more vulnerable to stress-initiated cortisol increases. Due to the large amount of suitable habitat outside the Project area, it is expected that deer would shift to areas away from ongoing Project activities without adverse effect.

Alternative 1

Direct and Indirect Effects

Suitable habitat for mule deer occurs throughout the entire Project area. Of the estimated 965.96 acres of suitable habitat within the ANF on Alternative 1, the amount of mule deer habitat that would be affected by Alternative 1 is 115.14 acres of temporary disturbance and 34.84 acres of permanent disturbance. Temporary disturbance represents 11.95% of the total mule deer habitat available within the analysis corridor for Alternative 1 and 0.02% of the total mule deer habitat available on the ANF, while permanent disturbance represents 3.61% of the total mule deer habitat available within the analysis corridor for Alternative 1 and $5.26 \times 10^{-3}\%$ of the total mule deer habitat available on the ANF.

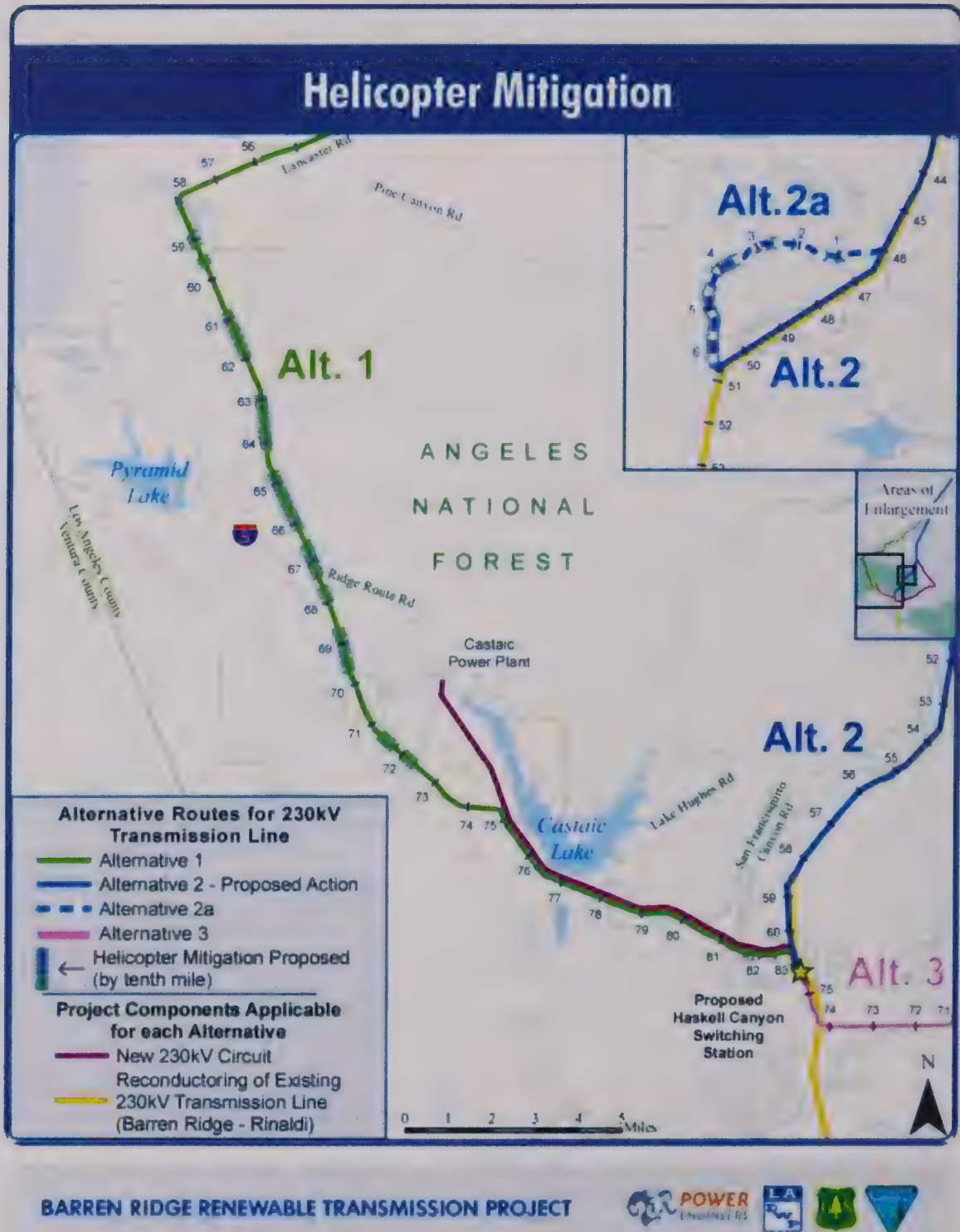
Existing vegetation would be removed on the 115.14 acres temporarily impacted by Project activities. Until native vegetation is recovered, this area would not provide suitable habitat for mule deer. Once native vegetation is established, the area would provide suitable habitat for mule deer. However, this vegetation would require several years to reach the conditions necessary for providing suitable cover and forage. Areas of permanent disturbance would not be revegetated and would be maintained as part of the transmission line's operation and maintenance activities.

Post-Project treatments would require efforts to ensure the establishment of native vegetation in areas of ground disturbance. If these efforts are not fully successful and there is an increased amount of invasive species, habitat values for deer would decrease. This would be especially true for the 1.49 acres of riparian habitat to be temporarily impacted on Alternative 1 (0.01% of all riparian habitat on the ANF), as riparian areas are particularly important for mule deer and fawning. Should riparian areas be negatively affected by BRRT, it may reduce their likelihood of being used again in the future until the habitat has been properly restored, or the human disturbance during construction may make deer temporarily wary of the areas.

Based on this, it is anticipated that Alternative 1 would result in temporary loss of 115.14 acres and permanent loss of 34.84 acres of suitable mule deer habitat. Existing browse and cover would be removed. Habitat values may be decreased if Project activities increase the distribution and abundance of invasive plants. If the Project impacts the hydrology of intermittent streams in areas such as Liebre Gulch or Charlie Canyon, where Project vehicles may pass directly through streambeds to access tower locations, it could have a more long-term impact on riparian vegetation and availability of surface water. This would also be true for RCAs that may be affected by construction on Alternative 1. It is anticipated that upwards of 100 RCAs would be affected on Alternative 1, mainly due to insufficient road width, which in many cases is a result of vegetation overgrowth along Edison Spring Road and particularly along the Old Ridge Route. Due to the limited road access, helicopter construction would be used to limit the anticipated impacts to the RCAs and availability of surface water for the mule deer. Figure 9, the Helicopter Mitigation Map, illustrates potential locations for helicopter construction.

There are patchy areas of oak trees in Charlie Canyon near the ROW that may require trimming at the time of construction if vehicles or equipment cannot pass without risking breaking branches. Acorns dropped by oaks provide food for mule deer and a reduction in the limbs or cover provided by oak trees may result in a similar reduction in available mast. Substantial removal of oak trees or habitat could result in decreased forage for mule deer.

FIGURE 9. IDENTIFIED HELICOPTER MITIGATION LOCATIONS



Cumulative Effects

The biggest impacts to deer from past, present and reasonable foreseeable future actions would likely be from an increase in disturbance by humans and permanent loss of foraging habitat. Factors such as hunting, poaching, road traffic, and diseases affect mule deer population numbers. Alternative 1 would parallel existing transmission lines, and construction of new roads, if necessary, would likely result in only a small increase in human accessibility. Because of the linear nature of transmission lines, permanent loss of forage is expected to be minimal and generally confined to areas where towers or access roads are placed, and even beneficial where temporary disturbance removes grasses or other competitors with the shrubs that deer favor, potentially increasing forage quality. Recent fires in or near Alternative 1—which include the Copper, Freeway, East, Ranch, Templin, Interstate, and Osito Fires—may increase forage quality for deer by diversifying the vegetation as the habitat recovers (Geomac 2010). Deer populations are typically reduced during the first year after chaparral burns due to the decrease in available forage and cover, but will increase again during the second and third years as succulent forage grows (Biswell 1961 and Taber and Dasman 1958 cited in Quinn 1990). This effect is typically confined to young chaparral growing within a 90-meter radius of the cover of older, unburned chaparral.

Riparian habitat within the San Gabriel Mountains on federal and non-federal lands has been affected by development and water diversions and extractions over the years, reducing the quantity and quality of this habitat type. As such, impacts to mule deer populations likely have occurred due to reduction in habitat quality and quantity for fawning, water sources, and movement corridors. Demands on water, and thus riparian/meadow habitat, will likely continue to increase with increasing human populations.

Proposed and planned housing developments within private in-holdings and urban interface areas will result in a loss of habitat for mule deer. Increased recreation use in both dispersed and developed recreation areas will continue to affect the mule deer usage of these areas. Hunting and poaching pressures may also increase as human populations adjacent to the Forest increase with development. Additionally, associated increases in vehicle traffic will likewise result in more injuries and deaths of deer while also reducing the quality of movement corridors that are bisected by busier roadways.

Annual hunting may have a cumulative effect on the resident mule deer population. Deer hunting season for Zone D-11 in 2010 was September 4 to September 26 (archery hunting) and October 9 to November 7 (general hunting) (CDFG 2010b). These dates are outside of the general animal breeding season, indicating that Project construction, which would be scheduled outside of breeding season, may occur concurrently with deer hunting season. The combination of hunting throughout Zone D-11 with the disturbance that would result within the BRRTP area may cause a cumulatively stressful environment for local mule deer, who may vacate the Project area during construction only to encounter hunters elsewhere in areas that deer may not have otherwise occurred without construction disturbance.

Non-native plant removal and fuel management activities are planned throughout the Forest. Although the emphasis of these treatments is to reduce fuel hazards and non-native plants, it is expected that they may contribute to some improvement in deer habitat capability. These include thinning, pruning, chipping, or burning vegetation surrounding plantations to create fuelbreaks, primarily of surrounding trees (USFS 2009 – 2010). These fuel reduction projects have likely or will likely temporarily reduce mule deer habitat and possibly temporarily drive deer away from the area due to the activity. It is expected that, over time, mule deer would return to these areas as vegetation begins to grow again.

SCE's Antelope-Pardee 500 kV Transmission Project may cause a cumulative effect to mule deer along with BRRTP. Within the ANF, Alternative 1 would be near the Antelope-Pardee Project only at its southern terminus, just north of the proposed Haskell Canyon Switching Station, a separation of approximately one mile. Mule deer have been observed several times in both project areas. Any identified threats to mule deer populations from the Antelope-Pardee Project—such as construction noise,

temporary or permanent loss of habitat, road use, or other construction impacts—may be reasonably assumed to cause a cumulative effect due to the close proximity of these projects. The Antelope-Pardee Project's construction was expected to result in the temporary abandonment of deer territories due to noise, increased human activity, and helicopter activity (Aspen 2006).

Cumulative Effects Conclusion

It is anticipated that implementation of Alternative 1, in combination with these past, present, and reasonably foreseeable future actions, would result in the temporary loss of 115.14 acres and the permanent loss of 34.84 acres of mule deer habitat in the analysis area. The temporary impact amount is equivalent to 0.02% of the total suitable mule deer habitat on the ANF, while the permanent impact amount is equivalent to $5.26 \times 10^{-3}\%$ of the total suitable mule deer habitat on the ANF. While temporary effects from the Project would not render the affected areas totally unsuitable for mule deer, affected areas would be expected to provide habitat of less value than adjacent undeveloped areas.

Alternative 2

Direct and Indirect Effects

Suitable habitat for mule deer occurs throughout the entire Project area. Of the estimated 787.30 acres of suitable habitat within the ANF on Alternative 2, the amount of mule deer habitat that would be affected by Alternative 2 is 88.1 acres of temporary disturbance and 24.51 acres of permanent disturbance. Temporary disturbance represents 11.19% of the total suitable mule deer habitat available within the analysis area for Alternative 2 and 0.01% of the total suitable mule deer habitat available on the ANF, while permanent disturbance represents 3.11% of the total suitable mule deer habitat available within the analysis area for Alternative 2 and $3.70 \times 10^{-3}\%$ of the total suitable mule deer habitat available on the ANF.

Existing vegetation would be removed on the 88.1 acres temporarily impacted by Project activities. Until native vegetation is recovered this area would not provide suitable habitat for mule deer. Once native vegetation is established, the area would provide suitable habitat for mule deer. However, this vegetation would require several years to reach the conditions necessary for providing suitable cover and forage. Areas of permanent disturbance would not be revegetated and would be maintained as part of the transmission line's operation and maintenance activities.

Post-Project treatments would require efforts to ensure the establishment of native vegetation in areas of ground disturbance. If these efforts are not fully successful and there is an increased amount of invasive species, habitat values for deer would decrease. This would be especially true for the 6.24 forested acres of riparian habitat to be temporarily impacted on Alternative 2 (0.02% of all riparian habitat on the ANF), as riparian areas are particularly important for mule deer and fawning. Should riparian areas be negatively affected by BR RTP, it may reduce their likelihood of being used again in the future until the habitat has been properly restored, or the human disturbance during construction may make deer temporarily wary of the areas.

Based on this, it is anticipated that Alternative 2 would result in temporary loss of 88.1 acres and permanent loss of 24.51 acres of suitable mule deer habitat. Existing browse and cover would be removed. Habitat values may decrease if Project activities increase the distribution and abundance of invasive plants. If the Project impacts the hydrology of intermittent streams in areas such as in Dry Canyon or Baird Canyon or even perennial areas such as Drinkwater Flat, where Project vehicles may pass directly through streambeds on access roads or to access tower locations, it could have a more long-term impact on riparian vegetation and availability of surface water. This would also be true for RCAs that may be affected by construction on Alternative 2. It is anticipated that 50 RCAs would be affected on Alternative 2, mainly due to insufficient road width. Some of these were already affected in April 2009 due to unauthorized road grading by LADWP, which will be addressed further in the Cumulative Effects

section. In steep terrain and areas that don't currently parallel an existing access road, helicopter construction may be used. Helicopter Mitigation has not been identified for Alternative 2 at this time; however, based on the existing lines that parallel Alternative 2, it is anticipated that very limited, if any, helicopter construction would be needed. The use of helicopters for the construction of transmission tower structures would eliminate the need for new access roads to structure locations, and would therefore minimize land disturbance associated with crane pads, structure laydown areas, and the trucks and tractors used for delivery of structures to sites.

Oak trees within Alternative 2 may be reduced from forest stand composition, reducing the amount of mast available for fall deer forage. This would be in areas such as Drinkwater Flat, the mouth of South Portal Canyon, and possibly also Bee Canyon, where coast live oak trees are prevalent and could possibly require trimming in order to allow safe passage of construction equipment. A temporary alternative transmission line would be required for construction of Alternative 2 around the Green Valley area to maintain power while the permanent structures are being upgraded. This temporary transmission line would be approximately 7.5 miles long from near LADWP's Power Plant 1 to just north of Johnson Road in Elizabeth Lake and would constitute 4.18 acres of temporary disturbance. The proposed corridor is located almost entirely directly adjacent to San Francisquito Canyon Road, and construction would predominantly occur in areas that are already disturbed or developed. Additionally, there are numerous oak trees lining San Francisquito Canyon Road in the Green Valley area and, although this is a more developed area of the canyon, these trees could be affected by construction of the transmission line parallel to the roadway. However, General Practices (GPs) included in Section 4.4 and the BR RTP DEIS/EIR (USFS, BLM and LADWP 2011) provide for measures that would work to minimize loss of mast-producing coast live oaks. The reduction of trees and browse shrubs from the Project is not expected to limit forage significantly due to the small footprint typical of linear energy transmission projects. In addition, temporary disturbance could result in a short-term improvement in forage quality in decadent brushlands and other late-successional areas should it allow early successional shrub habitat density to temporarily increase. Mule deer favor areas where trees and other non-shrubs are in lower levels of abundance to allow for denser patches of shrubs. An additional expected benefit of the Project is the improvement of the ratio of vegetative mosaics in dense chaparral cover.

Cumulative Effects

The biggest impacts to deer from past, present and reasonable foreseeable future actions would likely be from an increase in disturbance by humans and permanent loss of foraging habitat. Factors such as hunting, poaching, road traffic, and diseases affect mule deer population numbers. Alternative 2 would parallel existing transmission lines, and construction of new roads, if necessary, would likely result in only a small increase in human accessibility. Because of the linear nature of transmission lines, permanent loss of forage is expected to be minimal, and even beneficial where temporary disturbance removes grasses or other competitors with the shrubs that deer favor, potentially increasing forage quality. Recent fires in or near Alternative 2, such as the South Fire, may increase forage quality for deer by diversifying the vegetation as the habitat recovers (Geomac 2010). Deer populations are typically reduced during the first year after chaparral burns due to the decrease in available forage and cover, but will increase again during the second and third years as succulent forage grows (Biswell 1961 and Taber and Dasman 1958 cited in Quinn 1990). This effect is typically confined to young chaparral growing within a 90-meter radius of the cover of older, unburned chaparral.

Riparian habitat within the San Gabriel Mountains on federal and non-federal lands has been affected by development and water diversions and extractions over the years, reducing the quantity and quality of this habitat type. As such, impacts to mule deer populations likely have occurred due to reduction in habitat quality and quantity for fawning, water sources, and movement corridors. Demands on water, and thus riparian/meadow habitat, will likely continue to increase with increasing human populations.

Proposed and planned housing developments within private in-holdings and urban interface areas will result in a loss of habitat for mule deer. Increased recreation use in both dispersed and developed recreation areas will continue to affect the mule deer usage of these areas. Hunting and poaching pressures may also increase as human populations adjacent to the Forest increase with development. Additionally, associated increases in vehicle traffic will likewise result in more injuries and deaths of deer while also reducing the quality of movement corridors that are bisected by busier roadways.

Annual hunting may have a cumulative effect on the resident mule deer population. Deer hunting season for Zone D-11 in 2010 was September 4 to September 26 (archery hunting) and October 9 to November 7 (general hunting) (CDFG 2010b). These dates are outside of the general animal breeding season, indicating that Project construction, which would be scheduled outside of breeding season, may occur concurrently with deer hunting season. The combination of hunting throughout Zone D-11 with the disturbance that would result within the BR RTP area may cause a cumulatively stressful environment for local mule deer, who may vacate the project area during construction only to encounter hunters elsewhere in areas that deer may not have otherwise occurred without construction disturbance.

Non-native plant removal and fuel management activities are planned throughout the Forest. Although the emphasis of these treatments is to reduce fuel hazards and non-native plants, it is expected that they may contribute to some improvement in deer habitat capability. These include thinning, pruning, chipping, or burning vegetation surrounding plantations to create fuelbreaks, primarily of surrounding trees (USFS 2009 – 2010). These fuel reduction projects have likely or will likely temporarily reduce mule deer habitat and possibly temporarily drive deer away from the area due to the activity. It is expected that, over time, mule deer would return to these areas as vegetation begins to grow again.

SCE's Antelope-Pardee 500 kV Transmission Project may cause a cumulative effect to mule deer along with BR RTP. Alternative 2 would be less than two miles away at its closest spot within the ANF. Mule deer have been observed several times in both areas. Any identified threats to mule deer populations from the Antelope-Pardee Project—such as construction noise, temporary or permanent loss of habitat, road use, or other construction impacts—may be reasonably assumed to cause a cumulative effect due to the close proximity of these projects. The Antelope-Pardee Project's construction was expected to result in the temporary abandonment of deer territories due to noise, increased human activity, and helicopter activity (Aspen 2006).

In April 2009, LADWP conducted unauthorized road grading along approximately five miles of City Highline Motorway Fire Road, a road that would provide partial access to Alternative 2. This grading resulted in sediment in many RCAs and the trimming of numerous coast live oak trees, primarily in the Drinkwater Flat area, which may have a small and localized effect on the amount of available mast for mule deer to browse in this area. Any additional oak trimming that is necessary for construction passage during BR RTP would have a cumulative effect on the local quantity of forage in this area.

Cumulative Effects Conclusion

It is anticipated that implementation of Alternative 2, in combination with these past, present, and reasonably foreseeable future actions, would result in the temporary loss of 88.1 acres and the permanent loss of 24.51 acres of suitable mule deer habitat in the analysis area. The temporary impact amount is equivalent to 0.01% of the total suitable mule deer habitat available of the ANF, while the permanent impact amount is equivalent to $3.70 \times 10^{-3}\%$ of the total suitable mule deer habitat available on the ANF. While temporary effects from the Proposed Action would not render the affected areas totally unsuitable for mule deer, affected areas would be expected to provide habitat of less value than adjacent undeveloped areas.

Alternative 2a

Direct and Indirect Effects

Suitable habitat for mule deer occurs throughout the entire Project area. Of the estimated 940.11 acres of suitable habitat within the analysis area for Alternative 2a, the amount of mule deer habitat that would be affected by Alternative 2a is 103.32 acres of temporary disturbance and 29.57 acres of permanent disturbance. Temporary disturbance represents 10.99% of the suitable mule deer habitat available within the analysis area for Alternative 2a and 0.02% of the suitable mule deer habitat available on the ANF, while permanent disturbance represents 3.15% of the suitable mule deer habitat available within the analysis area for Alternative 2a and $4.46 \times 10^{-3}\%$ of the suitable mule deer habitat available on the ANF.

Existing vegetation would be removed on the 103.32 acres temporarily impacted by Project activities. Until native vegetation is recovered, this area would not provide suitable habitat for mule deer. Once native vegetation is established, the area would provide suitable habitat for mule deer. However, this vegetation would require several years to reach the conditions necessary for providing suitable cover and forage. Areas of permanent disturbance would not be revegetated and would be maintained as part of the transmission line's operation and maintenance activities.

Post-Project treatments would require efforts to ensure the establishment of native vegetation in areas of ground disturbance. If these efforts are not fully successful and there is an increased amount of invasive species, habitat values for deer would decrease. This would be especially true for the 5.7 acres of riparian habitat to be temporarily impacted in Alternative 2a (0.02% of the total riparian habitat on the ANF), as riparian areas are particularly important for mule deer and fawning. Should riparian areas be negatively affected by BR RTP, it may reduce their likelihood of being used again in the future until the habitat has been properly restored, or the human disturbance during construction may make deer temporarily wary of the areas.

Based on this, it is anticipated that Alternative 2a would result in temporary loss of 103.32 acres and permanent loss of 29.57 acres of suitable mule deer habitat. Existing browse and cover would be removed. Within the ANF where the terrain is steep and access is limited, the Forest Service would require that the new double-circuit 230 kV structures be constructed by the use of helicopter. Refer to Figure 9, the Helicopter Mitigation Map, which illustrates the proposed locations. Habitat values may be decreased if Project activities increase the distribution and abundance of invasive plants. If the Project impacts the hydrology of intermittent streams in areas such as in Dry Canyon, Baird Canyon, the ridges above South Portal Canyon, or even perennial areas such as Drinkwater Flat, where Project vehicles may pass directly through streambeds on access roads or to access tower locations, it could have a more long-term impact on riparian vegetation and availability of surface water. This would also be true for RCAs that may be affected by construction on Alternative 2a. It is anticipated that a total of 78 RCAs would be affected on Alternative 2a. Some of these were already affected in April 2009 due to unauthorized grading by LADWP, which will be addressed further in the Cumulative Effects section.

Oak trees within Alternative 2a may be reduced from forest stand composition, reducing the amount of mast available for fall deer forage. This would be in areas such as Drinkwater Flat, the mouth of South Portal Canyon, and possibly also Bee Canyon, where coast live oak trees are prevalent and could possibly require trimming in order to allow safe passage of construction equipment. The southern end of South Portal Canyon in particular has a fairly dense canopy cover dominated by oaks. The northern sections of the canyon have dense chaparral, but relatively low oak coverage. However, GPs included in Section 4.4 and the BR RTP DEIS/EIR (USFS, BLM and LADWP 2011) provide for measures that would work to minimize loss of mast-producing coast live oaks. The reduction of trees and browse shrubs from the Project is not expected to limit forage significantly due to the small footprint typical of linear energy transmission projects. In addition, temporary disturbance would likely result in a short-term improvement in forage quality in decadent brushlands and other late-successional areas should it allow early

successional shrub habitat density to temporarily increase. Mule deer favor areas where trees and other non-shrubs are in lower levels of abundance to allow for denser patches of shrubs. An additional expected benefit of the Project is the improvement of the ratio of vegetative mosaics in dense chaparral cover.

Cumulative Effects

The biggest impacts to deer from past, present and reasonable foreseeable future actions would likely be from an increase in disturbance by humans and permanent loss of foraging habitat. Factors such as hunting, poaching, road traffic, and diseases affect mule deer population numbers. Alternative 2a would partially parallel existing transmission lines and construction of new roads, if necessary, would likely result in only a small increase in human accessibility. However, areas from South Portal Canyon and north do not have existing transmission lines, and these areas would suffer relatively large impacts due to the new disturbance. While these areas and the roads associated with it are used for recreation purposes by the general public (equestrian, off-highway vehicle, hiking on the Pacific Crest Trail, bicycling), a new transmission line corridor would introduce an entirely new disturbance to local wildlife such as mule deer. Because of the linear nature of transmission lines, permanent loss of forage is expected to be minimal, and even beneficial where temporary disturbance removes grasses or other competitors with the shrubs that deer favor, potentially increasing forage quality. Recent fires in or near Alternative 2a, such as the Copper and South Fires, may increase forage quality for deer by diversifying the vegetation as the habitat recovers (Geomac 2010). Deer populations are typically reduced during the first year after chaparral burns due to the decrease in available forage and cover, but will increase again during the second and third years as succulent forage grows (Biswell 1961 and Taber and Dasman 1958 cited in Quinn 1990). This effect is typically confined to young chaparral growing within a 90-meter radius of the cover of older, unburned chaparral.

Riparian habitat within the San Gabriel Mountains on federal and non-federal lands has been affected by development and water diversions and extractions over the years, reducing the quantity and quality of this habitat type. As such, impacts to mule deer populations likely have occurred due to reduction in habitat quality and quantity for fawning, water sources, and movement corridors. Demands on water, and thus riparian/meadow habitat, will likely continue to increase with increasing human populations.

Proposed and planned housing developments within private in-holdings and urban interface areas will result in a loss of habitat for mule deer. Increased recreation use in both dispersed and developed recreation areas will continue to affect the mule deer usage of these areas. Hunting and poaching pressures may also increase as human populations adjacent to the Forest increase with development. Additionally, associated increases in vehicle traffic will likewise result in more injuries and deaths of deer while also reducing the quality of movement corridors that are bisected by busier roadways.

Annual hunting may have a cumulative effect on the resident mule deer population. Deer hunting season for Zone D-11 in 2010 was September 4 to September 26 (archery hunting) and October 9 to November 7 (general hunting) (CDFG 2010b). These dates are outside of the general animal breeding season, indicating that Project construction, which would be scheduled outside of breeding season, may occur concurrently with deer hunting season. The combination of hunting throughout Zone D-11 with the disturbance that would result within the BR RTP area may cause a cumulatively stressful environment for local mule deer, who may vacate the project area during construction only to encounter hunters elsewhere in areas that deer may not have otherwise occurred without construction disturbance.

Non-native plant removal and fuel management activities are planned throughout the Forest. Although the emphasis of these treatments is to reduce fuel hazards and non-native plants, it is expected that they may contribute to some improvement in deer habitat capability. These include thinning, pruning, chipping, or burning vegetation surrounding plantations to create fuelbreaks, primarily of surrounding trees (USFS 2009 – 2010). These fuel reduction projects have likely or will likely temporarily reduce mule deer

habitat and possibly temporarily drive deer away from the area due to the activity. It is expected that, over time, mule deer would return to these areas as vegetation begins to grow again.

SCE's Antelope-Pardee 500 kV Transmission Project may cause a cumulative effect to mule deer along with BR RTP. Alternative 2a would be less than two miles away at its closest spot within the ANF. Mule deer have been observed several times in both areas. Any identified threats to mule deer populations from the Antelope-Pardee Project—such as construction noise, temporary or permanent loss of habitat, road use, or other construction impacts—may be reasonably assumed to cause a cumulative effect due to the close proximity of these projects. The Antelope-Pardee Project's construction was expected to result in the temporary abandonment of deer territories from noise, increased human activity, and helicopter activity (Aspen 2006).

In April 2009, LADWP conducted unauthorized road grading along approximately five miles of City Highline Motorway Fire Road, a road that would provide partial access to Alternative 2a. This grading resulted in sediment in many RCAs and the trimming of numerous coast live oak trees, primarily in the Drinkwater Flat area, which may have a small and localized effect on the amount of available mast for mule deer to browse in this area. Any additional oak trimming that is necessary for construction passage during BR RTP would have a cumulative effect on the local quantity of forage in this area.

Cumulative Effects Conclusion

It is anticipated that implementation of Alternative 2a, in combination with these past, present, and reasonably foreseeable future actions, would result in the temporary loss of 103.32 acres and the permanent loss of 29.57 acres of mule deer habitat in the analysis area. The temporary impact amount is equivalent to 0.02% of the total acreage of suitable mule deer habitat on the ANF, while the permanent impact amount is equivalent to $4.46 \times 10^{-3}\%$ of the total suitable mule deer habitat on the ANF. While temporary effects from the Project would not render the affected areas totally unsuitable for mule deer, affected areas would be expected to provide habitat of less value than adjacent undeveloped areas.

Alternative 3

Direct and Indirect Effects

Suitable habitat for mule deer occurs throughout the entire Project area. Of the estimated 221.22 acres of suitable habitat within the analysis area for Alternative 3, the amount of mule deer habitat that would be affected by Alternative 3 is 36.84 acres of temporary disturbance and 13.82 acres of permanent disturbance. Temporary disturbance represents 16.65% of the total suitable mule deer habitat available in the analysis area for Alternative 3 and $5.56 \times 10^{-3}\%$ of the total suitable habitat available on the ANF, while permanent disturbance represents 6.25% of the total suitable mule deer habitat available in the analysis area for Alternative 3 and $2.08 \times 10^{-3}\%$ of the total suitable habitat available on the ANF.

Existing vegetation would be removed on the 36.84 acres temporarily impacted by Project activities. Until native vegetation is recovered, this area would not provide suitable habitat for mule deer. Once native vegetation is established, the area would provide suitable habitat for mule deer. However, this vegetation would require several years to reach the conditions necessary for providing suitable cover and forage. Areas of permanent disturbance would not be revegetated and would be maintained as part of the transmission line's operation and maintenance activities.

Post-Project treatments would require efforts to ensure the establishment of native vegetation in areas of ground disturbance. If these efforts are not fully successful and there is an increased amount of invasive species, habitat values for deer would decrease. This would be especially true for the 0.69 acre of riparian habitat to be temporarily impacted on Alternative 3 ($2.34 \times 10^{-3}\%$ of the total riparian habitat on the ANF), as riparian areas are particularly important for mule deer and fawning. Should riparian areas be negatively affected by BR RTP, it may reduce their likelihood of being used again in the future until the

habitat has been properly restored, or the human disturbance during construction may make deer temporarily wary of the areas.

Based on this, it is anticipated that Alternative 3 would result in temporary loss of 36.84 acres and permanent loss of 13.82 acres of suitable mule deer habitat. Existing browse and cover would be removed. Within the ANF where the terrain is steep and access is limited, the Forest Service would require that the new double-circuit 230 kV structures be constructed by the use of helicopter. Habitat values may be decreased if Project activities increase the distribution and abundance of invasive plants. If the Project impacts the hydrology of intermittent streams in areas such as in Vasquez Canyon, where Project vehicles may pass directly through the streambed on Lost Creek Road to access tower locations, it could have a more long-term impact on riparian vegetation and availability of surface water. This would also be true for RCAs that may be affected by construction on Alternative 3. It is anticipated that five RCAs would be affected by construction on Alternative 3. Not all of these are immediately within the Project ROW, but are present on the ANF in areas where potential access roads, such as Lost Creek Road, would pass through the area.

Cumulative Effects

The biggest impacts to deer from past, present and reasonable foreseeable future actions would likely be from an increase in disturbance by humans and permanent loss of foraging habitat. Factors such as hunting, poaching, road traffic, and diseases affect mule deer population numbers. Alternative 3 would parallel multiple existing transmission lines and construction of new roads, if necessary, would likely result in only a small increase in human accessibility. Because of the linear nature of transmission lines, permanent loss of forage is expected to be minimal, and even beneficial where temporary disturbance removes grasses or other competitors with the shrubs that deer favor, potentially increasing forage quality. Recent fires in or near Alternative 3, such as the 2007 Buckweed and Canyon Fires, may increase forage quality for deer by diversifying the vegetation as the habitat recovers (Geomac 2010). Deer populations are typically reduced during the first year after chaparral burns due to the decrease in available forage and cover, but will increase again during the second and third years as succulent forage grows (Biswell 1961 and Taber and Dasman 1958 cited in Quinn 1990). This effect is typically confined to young chaparral growing within a 90-meter radius of the cover of older, unburned chaparral.

Riparian habitat within the San Gabriel Mountains on federal and non-federal lands has been affected by development and water diversions and extractions over the years, reducing the quantity and quality of this habitat type. As such, impacts to mule deer populations likely have occurred due to reduction in habitat quality and quantity for fawning, water sources, and movement corridors. Demands on water, and thus riparian/meadow habitat, will likely continue to increase with increasing human populations.

Proposed and planned housing developments within private in-holdings and urban interface areas will result in a loss of habitat for mule deer. Increased recreation use in both dispersed and developed recreation areas will continue to affect the mule deer usage of these areas. Hunting and poaching pressures may also increase as human populations adjacent to the Forest increase with development. Additionally, associated increases in vehicle traffic will likewise result in more injuries and deaths of deer while also reducing the quality of movement corridors that are bisected by busier roadways.

Annual hunting may have a cumulative effect on the resident mule deer population. Deer hunting season for Zone D-11 in 2010 was September 4 to September 26 (archery hunting) and October 9 to November 7 (general hunting) (CDFG 2010b). These dates are outside of the general animal breeding season, indicating that Project construction, which would be scheduled outside of breeding season, may occur concurrently with deer hunting season. The combination of hunting throughout Zone D-11 with the disturbance that would result within the BRRTP area may cause a cumulatively stressful environment for

local mule deer, who may vacate the Project area during construction only to encounter hunters elsewhere in areas that deer may not have otherwise occurred without construction disturbance.

Non-native plant removal and fuel management activities are planned throughout the Forest. Although the emphasis of these treatments is to reduce fuel hazards and non-native plants, it is expected that they may contribute to some improvement in deer habitat capability. These include thinning, pruning, chipping, or burning vegetation surrounding plantations to create fuelbreaks, primarily of surrounding trees (USFS 2009 – 2010). These fuel reduction projects have likely or will likely temporarily reduce mule deer habitat and possibly temporarily drive deer away from the area due to the activity. It is expected that, over time, mule deer would return to these areas as vegetation begins to grow again.

SCE's Antelope-Pardee 500 kV Transmission Project may cause a cumulative effect to mule deer along with BR RTP. Alternative 3 would not be in the vicinity of the Antelope-Pardee Project within the ANF, although the ROWs would intersect in the mountains outside of the ANF. Mule deer have been observed several times in both project areas. Any identified threats to mule deer populations from the Antelope-Pardee Project—such as construction noise, temporary or permanent loss of habitat, road use, or other construction impacts—may be reasonably assumed to cause a cumulative effect due to the close proximity of these projects. The Antelope-Pardee Project's construction was expected to result in the temporary abandonment of deer territories due to noise, increased human activity, and helicopter activity (Aspen 2006).

Cumulative Effects Conclusion

It is anticipated that implementation of Alternative 3, in combination with these past, present, and reasonably foreseeable future actions, would result in the temporary loss of 36.84 acres and the permanent loss of 13.82 acres of mule deer habitat in the analysis area. The temporary impact amount is equivalent to $5.56 \times 10^{-3}\%$ of the total suitable mule deer habitat available on the ANF, while the permanent impact amount is equivalent to $2.08 \times 10^{-3}\%$ of the total suitable mule deer habitat available on the ANF. While temporary effects from the Project would not render the affected areas totally unsuitable for mule deer, affected areas would be expected to provide habitat of less value than adjacent undeveloped areas.

Reconductoring

Direct and Indirect Effects

Suitable habitat for mule deer occurs throughout the entire Project area. Of the estimated 787.68 acres of suitable habitat within the analysis area for the reconductoring, the amount of mule deer habitat that would be affected by reconductoring is 85.84 acres of temporary disturbance and 36.31 acres of permanent disturbance. Temporary disturbance represents 10.90% of the suitable mule deer habitat available within the analysis area for the reconductoring area and 0.01% of the suitable mule deer habitat available on the ANF, while permanent disturbance represents 4.61% of the suitable mule deer habitat available within the analysis area for the reconductoring area and $5.48 \times 10^{-3}\%$ of the suitable mule deer habitat available on the ANF. The proposed reconductoring area roughly parallels and is in close proximity to the proposed Alternative 2 alignment throughout the ANF. Therefore, many of the areas that it would affect are similar to the Alternative 2 affected areas. However, because exact disturbance will be dependent on actual road and individual tower conditions at the time of construction, the disturbance numbers given above and the effects described below are based on the assumption that the reconductoring operation would cause a similar amount of disturbance on average as the construction of the new transmission line. Actual disturbance may be lower than what is projected here, but cannot be accurately estimated at this time.

Existing vegetation would be removed on the 85.84 acres temporarily impacted by Project activities. Until native vegetation is recovered, this area would not provide suitable habitat for mule deer. Once native vegetation is established, the area would provide suitable habitat for mule deer. However, this vegetation

would require several years to reach the conditions necessary for providing suitable cover and forage. Areas of permanent disturbance would not be revegetated and would be maintained as part of the transmission line's operation and maintenance activities.

Post-project treatments would require efforts to ensure the establishment of native vegetation in areas of ground disturbance. If these efforts are not fully successful and there is an increased amount of invasive species, habitat values for deer would decrease. This would be especially true for the 9.60 acres of riparian habitat to be temporarily impacted in the reconductoring area (0.03% of the total riparian habitat on the ANF), as riparian areas are particularly important for mule deer and fawning. Should riparian areas be negatively affected by BRRTP, it may reduce their likelihood of being used again in the future until the habitat has been properly restored, or the human disturbance during construction may make deer temporarily wary of the areas.

Based on this, it is anticipated that the reconductoring would result in temporary loss of 85.84 acres and permanent loss of 36.31 acres of suitable mule deer habitat. Existing browse and cover would be removed. Habitat values may be decreased if the project activities increase the distribution and abundance of invasive plants. If the Project impacts the hydrology of intermittent streams in areas such as in Dry Canyon or Baird Canyon or even perennial areas such as Drinkwater Flat, where Project vehicles may pass directly through streambeds on access roads or to access tower locations, it could have a more long-term impact on riparian vegetation and availability of surface water. This would also be true for RCAs that may be affected by construction within the reconductoring area. It is anticipated that approximately 50 RCAs would be affected by the reconductoring. Most of the impacted RCAs would be the same as those impacted by Alternative 2, but in the short isolated areas where the two ROWs diverge, there may be a small difference in the number of RCAs affected by construction. RCAs would be affected mainly due to insufficient road width. Some of these were already affected in April 2009 due to unauthorized grading by LADWP, which will be addressed further in the Cumulative Effects section.

Oak trees within the reconductoring area may be reduced from forest stand composition, reducing the amount of mast available for fall deer forage. This would be in areas such as Drinkwater Flat, the mouth of South Portal Canyon, and possibly also Bee Canyon, where coast live oak trees are prevalent and could possibly require trimming in order to allow safe passage of construction equipment. Additionally, there are numerous oak trees lining San Francisquito Canyon Road in the Green Valley area and, although this is a more developed area of the canyon, these trees could be affected by reconductoring activities parallel to the roadway. However, GPs included in Section 4.4 and the BRRTP DEIS/EIR (USFS, BLM, and LADWP 2011) provide for measures that would work to minimize loss of mast-producing coast live oaks. The reduction of trees and browse shrubs due to the Project is not expected to limit forage significantly due to the small footprint typical of linear energy transmission projects. In addition, temporary disturbance would likely result in a short-term improvement in forage quality in decadent brushlands and other late-successional areas should it allow early successional shrub habitat density to temporarily increase. Mule deer favor areas where trees and other non-shrubs are in lower levels of abundance to allow for denser patches of shrubs. An additional expected benefit of the Project is the improvement of the ratio of vegetative mosaics in dense chaparral cover.

Cumulative Effects

The biggest impacts to deer from past, present and reasonable foreseeable future actions would likely be from an increase in disturbance by humans and permanent loss of foraging habitat. Factors such as hunting, poaching, road traffic, and diseases affect mule deer population numbers. The reconductoring area is an existing transmission line and at various points in the ANF parallels one or multiple existing transmission lines. Any construction of new roads or regarding of existing roads, where necessary, would likely result in only a small increase in human accessibility. Because this area has already been disturbed for construction, operation, and maintenance of the existing line, disturbance due to the reconductoring

would likely be low relative to that which would occur from construction of a new transmission line. In some areas, removal of vegetation may increase forage quality if it allows shrub growth to expand and increase in density. Recent fires in or near the reconductoring area, such as the South Fire, may increase forage quality for deer by diversifying the vegetation as the habitat recovers (Geomac 2010). Deer populations are typically reduced during the first year after chaparral burns due to the decrease in available forage and cover, but will increase again during the second and third years as succulent forage grows (Biswell 1961 and Taber and Dasman 1958 cited in Quinn 1990). This effect is typically confined to young chaparral growing within a 90-meter radius of the cover of older, unburned chaparral.

Riparian habitat within the San Gabriel Mountains on federal and non-federal lands has been affected by development and water diversions and extractions over the years, reducing the quantity and quality of this habitat type. As such, impacts to mule deer populations likely have occurred due to reduction in habitat quality and quantity for fawning, water sources, and movement corridors. Demands on water, and thus riparian/meadow habitat, will likely continue to increase with increasing human populations.

Proposed and planned housing developments within private in-holdings and urban interface areas will result in a loss of habitat for mule deer. Increased recreation use in both dispersed and developed recreation areas will continue to affect the mule deer usage of these areas. Hunting and poaching pressures may also increase as human populations adjacent to the Forest increase with development. Additionally, associated increases in vehicle traffic will likewise result in more injuries and deaths of deer while also reducing the quality of movement corridors that are bisected by busier roadways.

Annual hunting may have a cumulative effect on the resident mule deer population. Deer hunting season for Zone D-11 in 2010 was September 4 to September 26 (archery hunting) and October 9 to November 7 (general hunting) (CDFG 2010b). These dates are outside of the general animal breeding season, indicating that reconductoring for the BR RTP, which would be scheduled outside of breeding season, may occur concurrently with deer hunting season. The combination of hunting throughout Zone D-11 with the disturbance that would result within the BR RTP area may cause a cumulatively stressful environment for local mule deer, who may vacate the Project area during construction only to encounter hunters elsewhere in areas that deer may not have otherwise occurred without construction disturbance.

Non-native plant removal and fuel management activities are planned throughout the Forest. Although the emphasis of these treatments is to reduce fuel hazards and non-native plants, it is expected that they may contribute to some improvement in deer habitat capability. These include thinning, pruning, chipping, or burning vegetation surrounding plantations to create fuelbreaks, primarily of surrounding trees (USFS 2009 – 2010). These fuel reduction projects have likely or will likely temporarily reduce mule deer habitat and possibly temporarily drive deer away from the area due to the activity. It is expected that, over time, mule deer would return to these areas as vegetation begins to grow again.

SCE's Antelope-Pardee 500 kV Transmission Project may cause a cumulative effect to mule deer along with BR RTP. The reconductoring area would be less than two miles away at its closest spot within the ANF. Mule deer have been observed several times in both areas. Any identified threats to mule deer populations from the Antelope-Pardee Project—such as construction noise, temporary or permanent loss of habitat, road use, or other construction impacts—may be reasonably assumed to cause a cumulative effect due to the close proximity of these projects. The Antelope-Pardee Project's construction was expected to result in the temporary abandonment of deer territories due to noise, increased human activity, and helicopter activity (Aspen 2006).

In April 2009, LADWP conducted unauthorized road grading along approximately five miles of City Highline Motorway Fire Road, a road that provides partial access to the reconductoring area. This grading resulted in sediment in many RCAs and the trimming of numerous coast live oak trees, primarily in the Drinkwater Flat area, which may have a small and localized effect on the amount of available mast for

mule deer to browse in this area. Any additional oak trimming that is necessary for construction passage during BR RTP would have a cumulative effect on the local quantity of forage in this area.

Cumulative Effects Conclusion

It is anticipated that reconductoring of the existing transmission line, in combination with these past, present, and reasonably foreseeable future actions, would result in the temporary loss of 85.84 acres and the permanent loss of 36.31 acres of mule deer habitat in the analysis area. The temporary impact amount is equivalent to 0.01% of the total acreage of suitable mule deer habitat on the ANF, while the permanent impact amount is equivalent to $5.48 \times 10^{-3}\%$ of the total suitable mule deer habitat on the ANF. While temporary effects from the reconductoring would not render the affected areas totally unsuitable for mule deer, affected areas would be expected to provide habitat of less value than adjacent undeveloped areas.

New 230 kV Circuit

Direct and Indirect Effects

Suitable habitat for mule deer occurs throughout the entire Project area. Of the estimated 210.24 acres of suitable habitat within the analysis area for the new circuit, the amount of mule deer habitat that would be affected by the new circuit is 30.66 acres of temporary disturbance and 10.58 acres of permanent disturbance. Temporary disturbance represents 14.58% of the total suitable mule deer habitat available within the analysis area for the new circuit and $4.62 \times 10^{-3}\%$ of the total suitable mule deer habitat available on the ANF, while permanent disturbance represents 5.03% of the total suitable mule deer habitat available within the analysis area for the new circuit and $1.60 \times 10^{-3}\%$ of the total suitable mule deer habitat available on the ANF. The forested portion and much of the non-forested portion of the new circuit parallels Alternative 1. Therefore, many of the areas that it would affect within the ANF would be similar to the Alternative 1 affected areas. However, because exact disturbance will be dependent on actual road and individual tower conditions at the time of construction, the disturbance numbers given above and the effects described below are based on the assumption that installation of the new circuit would cause a similar amount of disturbance on average as the construction of the new Alternative 1 transmission line. Actual disturbance may be lower than what is projected here, but cannot be accurately estimated at this time.

Existing vegetation would be removed on the 30.66 acres temporarily impacted by Project activities. Until native vegetation is recovered, this area would not provide suitable habitat for mule deer. Once native vegetation is established, the area would provide suitable habitat for mule deer. However, this vegetation would require several years to reach the conditions necessary for providing suitable cover and forage. Areas of permanent disturbance would not be revegetated and would be maintained as part of the transmission line's operation and maintenance activities.

Post-Project treatments would require efforts to ensure the establishment of native vegetation in areas of ground disturbance. If these efforts are not fully successful and there is an increased amount of invasive species, habitat values for deer would decrease. This would be especially true for the 1.65 acres of riparian habitat to be temporarily impacted in the new circuit area (0.01% of the total riparian habitat on the ANF), as riparian areas are particularly important for mule deer and fawning. Should riparian areas be negatively affected by BR RTP, it may reduce their likelihood of being used again in the future until the habitat has been properly restored, or the human disturbance during construction may make deer temporarily wary of the areas.

Based on this, it is anticipated that the new circuit would result in temporary loss of 30.66 acres and permanent loss of 10.58 acres of suitable mule deer habitat. Existing browse and cover would be removed. Habitat values may be decreased if the Project activities increase the distribution and abundance of invasive plants. If the Project impacts the hydrology of intermittent streams in areas such as Charlie Canyon, where Project vehicles may pass directly through the streambed to access tower locations, it

could have a more long-term impact on riparian vegetation and availability of surface water. This would also be true for RCAs that may be affected by construction on the new circuit. It is expected that one RCA on the ANF may be affected by construction. There are numerous other streambed crossings outside of the forest, such as in Charlie Canyon, but these are not within the ANF. There are patchy areas of oak trees in Charlie Canyon near the ROW that may require trimming at the time of construction if vehicles or equipment cannot pass without risking breaking branches. Acorns dropped by oaks provide food for mule deer and a reduction in the limbs or cover provided by oak trees may result in a similar reduction in available mast. Substantial removal of oak trees or habitat could result in decreased forage for mule deer.

Cumulative Effects

The biggest impacts to deer from past, present and reasonable foreseeable future actions would likely be from an increase in disturbance by humans and permanent loss of foraging habitat. Factors such as hunting, poaching, road traffic, and diseases affect mule deer population numbers. The new circuit would be on an existing transmission line that also parallels one other existing line. Any construction of new roads or repair of existing roads, where necessary, would likely result in only a small increase in human accessibility. Because this area has already been disturbed for construction, operation, and maintenance of the existing line, disturbance due to the new circuit would likely be low relative to that which would occur from construction of a new transmission line. In some areas, removal of vegetation may increase forage quality if it allows shrub growth to expand and increase in density. Recent fires in or near the new circuit, such as the Copper and Freeway Fires, may increase forage quality for deer by diversifying the vegetation as the habitat recovers (Geomac 2010). Deer populations are typically reduced during the first year after chaparral burns due to the decrease in available forage and cover, but will increase again during the second and third years as succulent forage grows (Biswell 1961 and Taber and Dasman 1958 cited in Quinn 1990). This effect is typically confined to young chaparral growing within a 90-meter radius of the cover of older, unburned chaparral.

Riparian habitat within the San Gabriel Mountains on federal and non-federal lands has been affected by development and water diversions and extractions over the years, reducing the quantity and quality of this habitat type. As such, impacts to mule deer populations likely have occurred due to reduction in habitat quality and quantity for fawning, water sources, and movement corridors. Demands on water, and thus riparian/meadow habitat, will likely continue to increase with increasing human populations.

Proposed and planned housing developments within private in-holdings and urban interface areas will result in a loss of habitat for mule deer. Increased recreation use in both dispersed and developed recreation areas will continue to affect the mule deer usage of these areas. Hunting and poaching pressures may also increase as human populations adjacent to the Forest increase with development. Additionally, associated increases in vehicle traffic will likewise result in more injuries and deaths of deer while also reducing the quality of movement corridors that are bisected by busier roadways.

Annual hunting may have a cumulative effect on the resident mule deer population. Deer hunting season for Zone D-11 in 2010 was September 4 to September 26 (archery hunting) and October 9 to November 7 (general hunting) (CDFG 2010b). These dates are outside of the general animal breeding season, indicating that Project construction, which would be scheduled outside of breeding season, may occur concurrently with deer hunting season. The combination of hunting throughout Zone D-11 with the disturbance that would result within the BR RTP area may cause a cumulatively stressful environment for local mule deer, who may vacate the Project area during construction only to encounter hunters elsewhere in areas that deer may not have otherwise occurred without construction disturbance.

Non-native plant removal and fuel management activities are planned throughout the Forest. Although the emphasis of these treatments is to reduce fuel hazards and non-native plants, it is expected that they may contribute to some improvement in deer habitat capability. These include thinning, pruning, chipping, or

burning vegetation surrounding plantations to create fuelbreaks, primarily of surrounding trees (USFS 2009 – 2010). These fuel reduction projects have likely or will likely temporarily reduce mule deer habitat and possibly temporarily drive deer away from the area due to the activity. It is expected that, over time, mule deer would return to these areas as vegetation begins to grow again.

SCE's Antelope-Pardee 500kV Transmission Project may cause a cumulative effect to mule deer along with BR RTP. Within the ANF, the new circuit would be near the Antelope-Pardee Project only at its southern terminus, just north of the proposed Haskell Canyon Switching Station, a separation of approximately one mile. Mule deer have been observed several times in both project areas. Any identified threats to mule deer populations from the Antelope-Pardee Project—such as construction noise, temporary or permanent loss of habitat, road use, or other construction impacts—may be reasonably assumed to cause a cumulative effect due to the close proximity of these projects. The Antelope-Pardee Project's construction was expected to result in the temporary abandonment of deer territories due to noise, increased human activity, and helicopter activity (Aspen 2006).

Cumulative Effects Conclusion

It is anticipated that the new circuit, in combination with these past, present, and reasonably foreseeable future actions, would result in the temporary loss of 30.66 acres and the permanent loss of 10.58 acres of suitable mule deer habitat in the analysis area for the new circuit. The temporary impact amount is equivalent to $4.62 \times 10^{-3}\%$ of the total suitable mule deer habitat available on the ANF, while the permanent impact amount is equivalent to $1.60 \times 10^{-3}\%$ of the total suitable mule deer habitat available on the ANF. While temporary effects from the Proposed Action would not render the affected areas totally unsuitable for mule deer, affected areas would be expected to provide habitat of less value than adjacent undeveloped areas.

7.1.4 Summary of Habitat and Population Status and Trend at the Forest Scale

For monitoring, the Forest Service FEIS (USFS 2005b, Volume 2, page 77) identifies both habitat and population monitoring as acceptable methodologies. The sections below summarize the habitat and population status and trend data for the mule deer. This information is drawn from the detailed information on habitat and population trends in the ANF MIS Report (USFS 2008), which is hereby incorporated by reference.

- *Habitat Status and Trend*
Not utilized as the primary monitoring tool for mule deer on the ANF.
- *Population Status and Trend at the Forest Scale*
Population monitoring data collected by CDFG since 1998 indicates the deer population in Zone D-11 is considered stable to slightly declining, yet considerably below levels seen in the late 1960s and 1970s. As with most deer herds in California and other western states, the long-term population trend has been on a steady decline since the 1960s and 1970s. Detailed information on these population data is presented in the ANF MIS Report (USFS 2008).

7.1.5 Relationship of Project-Level Impacts to Forest Scale Habitat and Population Trends for the Species

Mule deer are found throughout the ANF (662,983 acres). Areas impacted by Project activities would not initially provide suitable habitat for mule deer. However, with successful implementation of restoration efforts, most of the Project area would be expected to provide suitable mule deer habitat in the future (more than five years). The Project-level habitat impacts would not alter or contribute to the existing forest-wide population trends for the mule deer.

7.2 MOUNTAIN LION (*PUMA CONCOLOR*)

7.2.1 Habitat/Species Relationship

The mountain lion was selected as an MIS to detect the effects of National Forest activities and uses on landscape-level habitat fragmentation and habitat linkages. A key factor determining the long-term strength of mountain lion populations in Southern California national forests is habitat fragmentation between mountains and open space on private lands (Dickson et al. 2005, USFS 2005b, Volume 1, page 126). They are associated with all habitat types and are affected by changes in landscape linkages and habitat fragmentation. According to the Forest Service FEIS (USFS 2005b, Volume 2, page 77), the objective for mountain lion on the ANF is to have well-distributed populations and functional landscape linkages. Due to California State law, mountain lions are only managed by CDFG if they are a nuisance animal or if a public threat occurs.

Mountain lions have large home ranges and require extensive areas of riparian vegetation and brushy stages of various habitats, with interspersions of irregular terrain, rocky outcrops, and tree/brush edges. Fragmentation of habitats by spread of human developments and associated roads, power transmission corridors, and other support facilities restricts movements and increases association with humans. These changes are detrimental to mountain lion populations (CDFG 2005). Mountain lion population counts are very difficult and expensive, and do not exist for the Project area. The CDFG estimates the mountain lion population statewide to be between 4,000 and 6,000 (CDFG 2007). They estimated the population to be 5,100 adults during the 1970s and 1980s. Based on records of depredation, attacks on people, and predation on prey populations, it is suspected that the population peaked in 1996, and has been somewhat stable for the past several years (CDFG 2007). Mountain lion encounters and sightings have been increasing, which may be due to a loss of habitat, expansion of urban development, shifting prey base, or dispersal of young outside of existing occupied areas (USFS 2008). The mountain lion is the largest carnivore in Southern California and requires large core habitat areas, abundant prey, and habitat connectivity between sub-populations. Mountain lion studies over the last 30 years have estimated population densities for different habitat types around the State. These density estimates varied from zero to ten lions per 100 square miles (CDFG 2007).

Mountain lion are widespread on the forest and are assumed to be present in all habitat types wherever deer, which represent approximately 60-80% of mountain lion diet, occur (CDFG 2005). The amount of suitable habitat for mountain lions on the ANF is estimated at 662,983 acres (USFS 2008). Mountain lions can survive in a variety of habitats, including deserts, Coast Ranges, and many types of covered habitats, especially those with streams (USFS 2008). More than half of California is prime mountain lion habitat. They prefer to reside, however, in areas where deer are most prevalent, such as forest and shrubland habitats (USFS 2008, Quinn 1990, CDFG 2005). Foothills and mountains are the most suitable mountain lion habitat, while valleys and deserts are considered unsuitable. Dickson et al. (2005) found that areas with riparian vegetation were used most frequently during a four-year study in the Santa Ana Mountains, while grassland, woodland, or urbanized areas were used least frequently.

Mountain lions require large patches of relatively undisturbed habitat and uninhibited connectivity between subpopulations (Penrod et al. 2004). While this is ideal, Dickson et al. (2005) found that mountain lions may travel more efficiently along dirt roads, and tend to avoid two-lane paved roads. Therefore it is important that mountain lions have dispersal and transportation corridors between the San Gabriel Mountains and the San Bernardino Mountains, as a reduction in habitat or availability of movement corridors within occupied habitat may be detrimental to the species. This movement corridor is currently threatened by the presence of the I-15 freeway, State Highway 138, and three railroad tracks, which severely impact the ability of mountain lions to move throughout their home ranges (USFS 2008). However, the ANF has some large areas of non-fragmented habitat ideal for supporting mountain lion populations, and currently there is no information that would lead to concern for mountain lion

populations on the ANF. Alternative 2, the reconductoring area, and the new circuit area all possess mixtures of paved and unpaved access roads.

According to the Forest Service FEIS (2005b, Volume 1, page 126), activities that sustain healthy mountain lion populations are related to activities that support healthy deer populations and provide travel routes for mountain lions to disperse to other suitable habitats. Like mule deer, mountain lions prefer solitary areas, so disturbances to riparian areas or deer habitat will also affect mountain lions (USFS 2005b, Volume 1, page 126). Vehicle access in mountain lion habitat raises the potential for disturbance, harassment, or mortality to mountain lions that may be present, and the addition of new roads can cause fragmentation in habitat, creating barriers that reduce mountain lion movement corridors. Also, as with mule deer, mountain lions are dependent on wildfire frequency, as fires will reduce canopy closure, increase plant vigor and accessibility, and improve shrub palatability, leading to a local increase in deer and indirectly benefiting mountain lions (USFS 2008).

It is unknown how the above population and density estimates relate to mountain lion numbers and trends on the ANF. Some habitat within the Project areas is not ideal for mountain lions, in that the habitat is not ideal for mule deer, its primary prey. However, at least one mountain lion was recently spotted in 2009 within the BR RTP area in Drinkwater Flat, indicating that mountain lions, while not necessarily common, are present within the Project area.

7.2.2 Project-level Effects Analysis Based on Habitat

Key Habitat Factor(s) for the Analysis: Availability of adequate prey base and habitat connectivity between sub-populations are the most limiting factors for mountain lions. The Forest Service FEIS (USFS 2005b, Volume 2, page 77) considers all habitat types as potentially suitable for the mountain lion. Therefore, the entire Project area is considered suitable habitat and could potentially be impacted by the Project.

Analysis Area for Project-level Effects Analysis: The analysis area for direct, indirect, and cumulative effects of the BR RTP on mountain lions varies according to Project components, which overlap and encompass different vegetation areas. Because the Forest Service FEIS (USFS 2005b, Volume 2, page 77) considers all habitat to be suitable for mountain lions, all habitat types are taken into account for disturbance estimates. Total acreage of each Project alternative or component on the ANF is presented in Table 9. These calculations are based on the 500-foot wide corridor and include projected habitat disturbance from construction staging areas and access roads.

TABLE 9. TOTAL MOUNTAIN LION HABITAT ACREAGE WITHIN THE ANALYSIS AREA FOR EACH BR RTP COMPONENT ON ANF AND THE PERCENTAGE OF TOTAL MOUNTAIN LION HABITAT ON THE ANF

	ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 2A	ALTERNATIVE 3	RECONDUCTORING	NEW CIRCUIT
Total Acres of Suitable Mountain Lion Habitat within the Analysis Area	965.96	787.30	940.11	221.22	787.68	210.24
Percentage of Total Suitable Mountain Lion Habitat on ANF (662,983 acres)	0.15%	0.12%	0.14%	0.03%	0.12%	0.03%
Total Acres of Suitable Mountain Lion Habitat Impacted within the Analysis Area*	149.98	112.61	132.89	50.66	122.15	41.24

	ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 2A	ALTERNATIVE 3	RECONDUCTORING	NEW CIRCUIT
Percentage Impacted of Total Suitable Mountain Lion Habitat on ANF (662,983 acres)	0.02%	0.02%	0.02%	0.01%	0.02%	0.01%

*This acreage is calculated based on the maximum temporary and permanent acreages and represents a "worst-case scenario" of disturbance.

Current Condition of the Key Habitat Factor(s) in the Analysis Area: The percentage of the total ANF that is within each individual Project component is above in Table 9.

7.2.3 Direct and Indirect Effects to Mountain Lion

The Project is expected to have little direct effect on mountain lions. Activities may temporarily displace or disturb individuals, but this is expected to be an uncommon occurrence due to the large home ranges utilized by mountain lions, which in turn results in a typically low population density. However, noise and activity associated with helicopter construction may disturb mountain lions in the Project area and cause temporary changes in mountain lions occurrences and distribution. Population densities have been estimated based on studies over the last 30 years to be somewhere between zero and ten mountain lions per 100 square miles (CDFG 2007). A female with young could potentially occur within or near the Project area. Females with young usually remain within a defined area near a cave or other natural cavity, but Project activity is not expected to cause mortality. Mountain lions prefer vegetated ridgetops and riparian areas for traveling and hunting; the Alternative 2 and 2a access road and transmission line through Drinkwater Flat would be adjacent to a perennial streambed, where a mountain lion was located in 2009 (USFS 2008). Female home ranges in Southern California were measured to be an average of 93 km², while male ranges were measured at approximately 363 km² (USFS 2008). Increased vehicle activity may increase the chance for a collision and/or illegal poaching, resulting in injury or mortality, but this is expected to be a rare occurrence.

The indirect effects of the Project would likely be to slightly improve the quality of mule deer habitat by creating new edge habitat and removing vegetation during construction that could potentially grow back and provide new mast and food for deer, which prefer young chaparral or ecotones (Quinn 1990). This may temporarily result in the loss of habitat for both mountain lions and their prey, such as mule deer, but as vegetation grows back it may be more attractive to mule deer, indirectly benefiting mountain lions. This edge habitat would be created along additional access roads or areas that are to be graded for permanent habitat removal, such as tower pads. Studies have shown that mountain lions prefer edge habitat, as this is where deer tend to gather and where convenient cover can be found for hiding (Quinn 1990). Alternatively, the Project vegetation treatments may reduce the density of hiding cover for these animals, but the linear nature of the Project footprint is not expected to increase habitat fragmentation. Mountain lions are active day or night, but tend to be most active during nocturnal hours in areas frequented by humans (Reid 2006). As such, they are less likely to be disturbed during diurnal vegetation removal and construction, although they could still be present.

Alternative 1

Direct and Indirect Effects

Suitable habitat for mountain lion occurs throughout the Project area. Since the Project area is expected to provide suitable habitat for mule deer, corresponding mountain lion use is also expected. Of the estimated 965.96 acres of suitable habitat within the analysis area along Alternative 1, the amount of mountain lion habitat that would be affected by Alternative 1 is 115.14 acres of temporary disturbance and 34.84 acres of permanent disturbance. Temporary disturbance represents 11.95% of the total suitable mountain lion habitat available within the analysis area for Alternative 1 and 0.02% of the total suitable mountain lion habitat available on the ANF, while permanent disturbance represents 3.61% of the total suitable

mountain lion habitat available within the analysis area for Alternative 1 and $5.26 \times 10^{-3}\%$ of the total suitable mountain lion habitat available on the ANF.

Existing vegetation would be removed on the 115.14 acres that would be temporarily affected. Until native vegetation is recovered, this area would not provide suitable habitat for mountain lion. Once native vegetation is established, the area would provide suitable habitat for mountain lion. However, this vegetation would require several years to reach the conditions necessary for providing suitable habitat. Areas of permanent disturbance would not be revegetated and would be maintained as part of the transmission line's operation and maintenance activities.

Helicopter mitigation has been proposed to be implemented in several areas within the ANF (Figure 9). Noise and activity associated with the helicopter construction may disturb mountain lions in the Project area and cause changes in occurrences and distribution. Dispersal- or noise-induced stress may lower animals' fitness and temporarily reduce their abilities to mate and raise young or efficiently forage.

Post-Project treatments would require efforts to ensure the establishment of native vegetation in areas of ground disturbance. If these efforts are not fully successful and there is an increased amount of invasive species, habitat values for the mule deer, the mountain lion's preferred prey base, would decrease. This would be especially true for the 1.49 acres of riparian habitat to be temporarily impacted on Alternative 1 (0.01% of the total riparian habitat on the ANF), as riparian areas are particularly important for mule deer and fawning. The improvement of habitat conditions for deer would benefit mountain lions by providing additional hunting opportunities. However, helicopter construction would also have some beneficial effects. It would reduce the amount of road access required by the Project, possibly decreasing the amount of road widening and subsequent disturbance to surrounding vegetation and riparian conservation areas. The average maximum permanent disturbance acreages per mile with conventional construction are 2.4 acres for existing roads to be widened, 4.8 acres for new flat roads, 7.7 acres for new sloping roads, 11.6 acres for new steep roads, and 15.5 acres for new very steep roads. In contrast, the average maximum permanent disturbance per mile for helicopter construction is 0.8 acre.

It is anticipated that Alternative 1 would result in temporary loss of 115.14 acres and permanent loss of 34.84 acres of suitable mountain lion habitat. Existing cover would be removed. Habitat values may be decreased if Project activities increase the distribution and abundance of invasive plants. If the Project impacts the hydrology of intermittent streams in areas such as Liebre Gulch or Charlie Canyon, where Project vehicles may pass directly through streambeds to access tower locations, it could have a more long-term impact on riparian vegetation and availability of surface water. This would also be true for RCAs that may be affected by construction on Alternative 1. It is anticipated that upwards of 100 RCAs would be affected on Alternative 1, mainly due to insufficient road width which, in many cases, is a result of vegetation overgrowth along Edison Spring Road and particularly along the Old Ridge Route. There are patchy areas of oak trees in Charlie Canyon near the ROW that may require trimming at the time of construction if vehicles or equipment cannot pass without risking breaking branches. Acorns dropped by oaks provide food for mule deer, and this could be a foraging area for mule deer, thereby affecting mountain lions if foraging trees are trimmed during construction.

Cumulative Effects

Because of their large home ranges, there are no past or future activities anticipated that would have significant cumulative effects on mountain lions or their habitat within the Forest. Influences to prey, such as hunting or diseases that affect mule deer population numbers, would probably have more effect on mountain lion numbers. Projects that are deemed to have cumulative effects on mule deer would likely have some effect on mountain lions, as well, on a local level.

Riparian habitat within the San Gabriel Mountains on federal and non-federal lands has been affected by development and water diversions and extractions over the years, reducing the quantity and quality of this habitat type. As such, impacts to mule deer populations likely have occurred due to reduction in habitat quality and quantity for fawning, water sources, and movement corridors. Demands on water, and thus riparian/meadow habitat, will likely continue to increase with increasing human populations. Since deer are the primary prey species for mountain lion, impacts to their populations will influence mountain lion usage.

Annual hunting may have a cumulative effect on the resident mule deer population. Based on current deer hunting season dates, it is possible that BRRTP construction may be occurring at the same time as hunting season. This may cause deer to vacate the area and may result in slightly higher deer mortalities due to deer being stressed and attempting to avoid construction and hunters simultaneously. This may in turn have a negative effect on mountain lions, which rely mainly on mule deer for prey.

Proposed and planned housing developments within private inholdings and urban interface areas will result in a loss of habitat for mule deer. Increased recreation use in both dispersed and developed recreation areas will continue to affect the mule deer usage of these areas. Hunting and poaching pressures may also increase as human populations adjacent to the Forest increase with development. Additionally, associated increases in vehicle traffic will likewise result in more injuries and deaths of deer while also reducing the quality of movement corridors that are bisected by busier roadways. Increasing urbanization and agricultural pressure outside the forest boundary may reduce deer populations on the surrounding lands. As a result, mountain lions may attack more pets and livestock or otherwise threaten local communities, leading to more depredation killings.

Non-native plant removal and fuel management activities are planned throughout the Forest. Although the emphasis of these treatments is to reduce fuel hazards and non-native plants, it is anticipated that they may contribute to some improvement in deer habitat capability. Since deer are the primary prey species for mountain lion, treatments that benefit their populations will also benefit mountain lions. The various fuel reduction or fuelbreak projects that have occurred in the past or are proposed for the future at plantations within the ANF may reduce deer habitat and/or drive deer from the area based on the act of thinning, pruning, chipping, or burning surrounding vegetation (USFS 2009 – 2010). It is expected, however, that over time mule deer and mountain lions would return to these areas as vegetation begins to grow again.

An area of concern has been the continued decline in permeability of the critical landscape linkages from the San Gabriel Mountains to the other adjacent mountain ranges that support mountain lions. Increased widening of the existing highway system and new highways or railways, both within and outside the National Forest, can create barriers to movement.

SCE's Antelope-Pardee 500 kV Transmission Project may cause a cumulative effect to mule deer along with BRRTP. Within the ANF, the new circuit would be near the Antelope-Pardee Project only at its southern terminus, just north of the proposed Haskell Canyon Switching Station, a separation of approximately one mile. The Antelope-Pardee Project's construction was expected to result in the temporary abandonment of deer territories due to noise, increased human activity, and helicopter activity (Aspen 2006). These activities may also stress mountain lions not only because of deer abandoning the area, but because the activities may scare away the mountain lions as well.

SCE's TRTP will be partially built within the ANF and is expected to have an effect on mule deer. SCE estimates that 272 acres of mountain lion habitat will be impacted by the construction of the proposed project, comprising 0.04% of the total mountain lion habitat on the ANF (Aspen 2009). These types of disturbances consist of but are not limited to tower construction; wire stringing; construction, maintenance, or improvement of access roads; and use of staging areas, landing pads, and support yards.

Cumulative Effects Conclusion

It is anticipated that construction of Alternative 1, in combination with these past, present, and reasonably foreseeable future actions, would result in the temporary loss of 115.14 acres and the permanent loss of 34.84 acres of mule deer habitat in the analysis area, thereby impacting mountain lion. The temporary impact amount is equivalent to 0.02% of the total acreage of suitable mountain lion habitat within the ANF, while the permanent impact amount is equivalent to $5.26 \times 10^{-3}\%$ of the total acreage of suitable mountain lion habitat on the ANF. While temporary effects from Alternative 1 would not render the affected areas totally unsuitable for mountain lion, affected areas would be expected to provide habitat of less value than adjacent undeveloped areas.

Alternative 2

Direct and Indirect Effects

Suitable habitat for mountain lion occurs throughout the Project area. Since the Project area is expected to provide suitable habitat for mule deer, corresponding mountain lion use is also expected. Of the estimated 787.30 acres of suitable habitat within the analysis area for Alternative 2, the amount of mountain lion habitat that would be affected by Alternative 2 is 88.1 acres of temporary disturbance and 24.51 acres of permanent disturbance. Temporary disturbance represents 11.19% of the total suitable mountain lion habitat available along Alternative 2 and 0.01% of the total suitable mountain lion habitat available on the ANF, while permanent disturbance represents 3.11% of the total suitable mountain lion habitat available along Alternative 2 and $3.70 \times 10^{-3}\%$ of the total suitable mountain lion habitat available on the ANF.

Existing vegetation would be removed on the 88.1 acres temporarily impacted by Project activities. Until native vegetation is recovered, this area would not provide suitable habitat for mountain lion. Once native vegetation is established, the area would provide suitable habitat for mountain lion. However, this vegetation would require several years to reach the conditions necessary for providing suitable habitat. Areas of permanent disturbance would not be revegetated and would be maintained as part of the transmission line's operation and maintenance activities.

Post-Project treatments would require efforts to ensure the establishment of native vegetation in areas of ground disturbance. If these efforts are not fully successful and there is an increased amount of invasive species, habitat values for the mule deer, the mountain lion's preferred prey base, would decrease. This would be especially true for the 6.24 acres of riparian habitat to be temporarily impacted on Alternative 2 (0.02% of the total riparian habitat on the ANF), as riparian areas are particularly important for mule deer and fawning. Improved habitat conditions for deer would benefit mountain lions by providing additional hunting opportunities.

Based on this, it is anticipated that Alternative 2 would result in temporary loss of 88.1 acres and permanent loss of 24.51 acres of suitable mountain lion habitat. Existing cover would be removed. Habitat values may be decreased if Project activities increase the distribution and abundance of invasive plants. If the Project impacts the hydrology of intermittent streams in areas such as in Dry Canyon or Baird Canyon or even perennial areas such as Drinkwater Flat, where Project vehicles may pass directly through streambeds on access roads or to access tower locations, it could have a more long-term impact on riparian vegetation and availability of surface water. This would also be true for RCAs that may be affected by construction on Alternative 2. It is anticipated that 50 RCAs would be affected on Alternative 2, mainly due to insufficient road width. Some of these were already affected in April 2009 due to unauthorized grading by LADWP, which will be addressed further in the Cumulative Effects section.

Oak trees within Alternative 2 may be reduced from forest stand composition, reducing the amount of mast available for fall deer forage and making mule deer, the mountain lion's primary prey, less likely to spend extensive time in these areas. This would occur in areas such as Drinkwater Flat, the mouth of

South Portal Canyon, and possibly also Bee Canyon, where coast live oak trees are prevalent and could possibly require trimming in order to allow safe passage of construction equipment. A temporary alternative transmission line would be required for construction of Alternative 2 around the Green Valley area to maintain power while the permanent structures are being upgraded. This temporary transmission line would be approximately 7.5 miles long from near LADWP's Power Plant 1 to just north of Johnson Road in Elizabeth Lake and would constitute 4.18 acres of temporary disturbance. The proposed corridor is located almost entirely directly adjacent to San Francisquito Canyon Road, and construction would predominantly occur in areas that are already disturbed or developed. Additionally, there are numerous oak trees lining San Francisquito Canyon Road in the Green Valley area and, although this is a more developed area of the canyon, these trees could be affected by construction of the transmission line parallel to the roadway. However, GPs included in Section 4.4 and the BR RTP DEIS/EIR (USFS, BLM, LADWP 2011) provide for measures that would work to minimize loss of mast-producing coast live oaks. The reduction of trees and browse shrubs from the Project is not expected to limit forage significantly due to the small footprint typical of linear energy transmission projects. In addition, temporary disturbance would likely result in a short-term improvement in forage quality in decadent brushlands and other late-successional areas. An additional expected benefit of the Project is the improvement of the ratio of vegetative mosaics in dense chaparral cover.

Cumulative Effects

Because of their large home ranges, there are no past or future activities anticipated that would have significant cumulative effects on mountain lions or their habitat within the Forest. Influences to prey, such as hunting or diseases that affect mule deer population numbers, would probably have more effect on mountain lion numbers. Projects that are deemed to have cumulative effects on mule deer would likely have some effect on mountain lions, as well, on a local level.

Riparian habitat within the San Gabriel Mountains on federal and non-federal lands has been affected by development and water diversions and extractions over the years, reducing the quantity and quality of this habitat type. As such, impacts to mule deer populations likely have occurred due to reduction in habitat quality and quantity for fawning, water sources, and movement corridors. Demands on water, and thus riparian/meadow habitat, will likely continue to increase with increasing human populations. Since deer are the primary prey species for mountain lion, impacts to their populations will influence mountain lion usage.

Annual hunting may have a cumulative effect on the resident mule deer population. Based on current deer hunting season dates, it is possible that BR RTP construction may be occurring at the same time as hunting season. This may cause deer to vacate the area and may result in slightly higher deer mortalities due to deer being stressed and attempting to avoid construction and hunters simultaneously. This may in turn have a negative effect on mountain lions, which rely mainly on mule deer for prey.

Proposed and planned housing developments within private inholdings and urban interface areas will result in a loss of habitat for mule deer. Increased recreation use in both dispersed and developed recreation areas will continue to affect the mule deer usage of these areas. Hunting and poaching pressures may also increase as human populations adjacent to the Forest increase with development. Additionally, associated increases in vehicle traffic will likewise result in more injuries and deaths of deer while also reducing the quality of movement corridors that are bisected by busier roadways. Increasing urbanization and agricultural pressure outside the forest boundary may reduce deer populations on the surrounding lands. As a result, mountain lions may attack more pets and livestock or otherwise threaten local communities, leading to more depredation killings.

Non-native plant removal and fuel management activities are planned throughout the Forest. Although the emphasis of these treatments is to reduce fuel hazards and non-native plants, it is anticipated that they

may contribute to some improvement in deer habitat capability. Since deer are the primary prey species for mountain lion, treatments that benefit their populations will also benefit mountain lions. The various fuel reduction or fuelbreak projects that have occurred in the past or are proposed for the future at plantations within the ANF may reduce deer habitat and/or drive deer from the area based on the act of thinning, pruning, chipping, or burning surrounding vegetation (USFS 2009 – 2010). It is expected, however, that over time mule deer and mountain lions would return to these areas as vegetation begins to grow again.

An area of concern has been the continued decline in permeability of the critical landscape linkages from the San Gabriel Mountains to the other adjacent mountain ranges that support mountain lions. Increased widening of the existing highway system and new highways or railways, both within and outside the National Forest, can create barriers to movement.

SCE's Antelope-Pardee 500 kV Transmission Project may cause a cumulative effect to mule deer along with BR RTP. Alternative 2 would be only about two miles west of the Antelope-Pardee Project at its closest point. The Antelope-Pardee Project's construction was expected to result in the temporary abandonment of deer territories due noise, increased human activity, and helicopter activity (Aspen 2006). These activities may also stress mountain lions not only because of deer abandoning the area, but because the activities may scare away the mountain lions as well.

In April 2009, LADWP conducted unauthorized road grading along approximately five miles of City Highline Motorway Fire Road, a road that would provide partial access to Alternative 2. This grading resulted in sediment in many RCAs and the trimming of numerous coast live oak trees, primarily in the Drinkwater Flat area, which may have a small and localized effect on the amount of available mast for mule deer to browse in this area. Any additional oak trimming that is necessary for construction passage during BR RTP would have a cumulative effect on the local quantity of forage in this area, indirectly affecting mountain lion habitat and prey suitability.

Cumulative Effects Conclusion

It is anticipated that implementation of Alternative 2, in combination with these past, present, and reasonably foreseeable future actions, would result in the temporary loss of 88.1 acres and the permanent loss of 24.51 acres of mountain lion habitat in the analysis area. The temporary impact amount is equivalent to 0.01% of the total suitable mountain lion habitat available on the ANF, while the permanent impact amount is equivalent to $3.70 \times 10^{-3}\%$ of the total suitable mountain lion habitat available on the ANF. While temporary effects from the Proposed Action would not render the affected areas totally unsuitable for mountain lions, affected areas would be expected to provide habitat of less value than adjacent undeveloped areas.

Alternative 2a

Direct and Indirect Effects

Suitable habitat for mountain lion occurs throughout the Project area. Since the Project area is expected to provide suitable habitat for mule deer, corresponding mountain lion use is also expected. Of the estimated 940.11 acres of suitable habitat within the analysis area on Alternative 2a, the amount of mountain lion habitat that would be affected by Alternative 2a is 103.32 acres of temporary disturbance and 29.57 acres of permanent disturbance. Temporary disturbance represents 10.99% of the total suitable mountain lion habitat within the analysis area for Alternative 2a and 0.02% of the total suitable mountain lion habitat available on the ANF, while permanent disturbance represents 3.15% of the total suitable mountain lion habitat within the analysis area for Alternative 2a and $4.46 \times 10^{-3}\%$ of the total suitable mountain lion habitat available on the ANF.

Existing vegetation would be removed on the 103.32 acres temporarily impacted by Project activities. Until native vegetation is recovered, this area would not provide suitable habitat for mountain lion. Once native vegetation is established, the area would provide suitable habitat for mountain lion. However, this vegetation would require several years to reach the conditions necessary for providing suitable habitat. Areas of permanent disturbance would not be revegetated and would be maintained as part of the transmission line's operation and maintenance activities.

Post-Project treatments would require efforts to ensure the establishment of native vegetation in areas of ground disturbance. If these efforts are not fully successful and there is an increased amount of invasive species, habitat values for the mule deer, the mountain lion's preferred prey base, would decrease. This would be especially true for the 5.7 acres of riparian habitat to be temporarily impacted on Alternative 2a (0.02% of the total riparian habitat on the ANF), as riparian areas are particularly important for mule deer and fawning. Improved habitat conditions for deer would benefit mountain lions by providing additional hunting opportunities.

Based on this, it is anticipated that Alternative 2a would result in temporary loss of 103.32 acres and permanent loss of 29.57 acres of suitable mountain lion habitat. Existing cover would be removed. Habitat values may be decreased if Project activities increase the distribution and abundance of invasive plants. If the Project impacts the hydrology of intermittent streams in areas such as in Dry Canyon or Baird Canyon or even perennial areas such as Drinkwater Flat, where Project vehicles may pass directly through streambeds on access roads or to access tower locations, it could have a more long-term impact on riparian vegetation and availability of surface water. This would also be true for RCAs that may be affected by construction on Alternative 2a. It is anticipated that a total of 78 RCAs would be affected on Alternative 2a. Some of these were already affected in April 2009 due to unauthorized grading by LADWP, which will be addressed further in the Cumulative Effects section.

Oak trees within Alternative 2a may be reduced from forest stand composition, reducing the amount of mast available for fall deer forage and making mule deer, the mountain lion's primary prey, less likely to spend extensive time in these areas. This would be in areas such as Drinkwater Flat, the mouth of South Portal Canyon, and possibly also Bee Canyon, where coast live oak trees are prevalent and could possibly require trimming in order to allow safe passage of construction equipment. A temporary alternative transmission line would be required for construction of Alternative 2 around the Green Valley area to maintain power while the permanent structures are being upgraded. This temporary transmission line would be approximately 7.5 miles long from near LADWP's Power Plant 1 to just north of Johnson Road in Elizabeth Lake and would constitute 4.18 acres of temporary disturbance. The proposed corridor is located almost entirely directly adjacent to San Francisquito Canyon Road, and construction would predominantly occur in areas that are already disturbed or developed. Additionally, there are numerous oak trees lining San Francisquito Canyon Road in the Green Valley area and, although this is a more developed area of the canyon, these trees could be affected by construction of the transmission line parallel to the roadway. However, GPs included in Section 4.4 and the BRRTP DEIS/EIR (USFS, BLM and LADWP 2011) provide for measures that would work to minimize loss of mast-producing coast live oaks. The reduction of trees and browse shrubs from the Project is not expected to limit forage significantly due to the small footprint typical of linear energy transmission projects. In addition, temporary disturbance would likely result in a short-term improvement in forage quality in decadent brushlands and other late-successional areas. An additional expected benefit of the Project is the improvement of the ratio of vegetative mosaics in dense chaparral cover.

Cumulative Effects

Because of their large home ranges, there are no past or future activities anticipated that would have significant cumulative effects on mountain lions or their habitat within the Forest. Influences to prey, such as hunting or diseases that affect mule deer population numbers, would probably have more effect on

mountain lion numbers. Projects that are deemed to have cumulative effects on mule deer would likely have some effect on mountain lions, as well, on a local level.

Riparian habitat within the San Gabriel Mountains on federal and non-federal lands has been affected by development and water diversions and extractions over the years, reducing the quantity and quality of this habitat type. As such, impacts to mule deer populations likely have occurred due to reduction in habitat quality and quantity for fawning, water sources, and movement corridors. Demands on water, and thus riparian/meadow habitat, will likely continue to increase with increasing human populations. Since deer are the primary prey species for mountain lion, impacts to their populations will influence mountain lion use.

Annual hunting may have a cumulative effect on the resident mule deer population. Based on current deer hunting season dates, it is possible that BRRTP construction may be occurring at the same time as hunting season. This may cause deer to vacate the area and may result in slightly higher deer mortalities due to deer being stressed and attempting to avoid construction and hunters simultaneously. This may in turn have a negative effect on mountain lions, which rely mainly on mule deer for prey.

Proposed and planned housing developments within private inholdings and urban interface areas will result in a loss of habitat for mule deer. Increased recreation use in both dispersed and developed recreation areas will continue to affect the mule deer usage of these areas. Hunting and poaching pressures may also increase as human populations adjacent to the Forest increase with development. Additionally, associated increases in vehicle traffic will likewise result in more injuries and deaths of deer while also reducing the quality of movement corridors that are bisected by busier roadways. Increasing urbanization and agricultural pressure outside the forest boundary may reduce deer populations on the surrounding lands. As a result, mountain lions may attack more pets and livestock or otherwise threaten local communities, leading to more depredation killings.

Non-native plant removal and fuel management activities are planned throughout the Forest. Although the emphasis of these treatments is to reduce fuel hazards and non-native plants, it is anticipated that they may contribute to some improvement in deer habitat capability. Since deer are the primary prey species for mountain lion, treatments that benefit their populations will also benefit mountain lions. The various fuel reduction or fuelbreak projects that have occurred in the past or are proposed for the future at plantations within the ANF may reduce deer habitat and/or drive deer from the area based on the act of thinning, pruning, chipping, or burning surrounding vegetation (USFS 2009 – 2010). It is expected, however, that over time mule deer and mountain lions would return to these areas as vegetation begins to grow again.

An area of concern has been the continued decline in permeability of the critical landscape linkages from the San Gabriel Mountains to the other adjacent mountain ranges that support mountain lions. Increased widening of the existing highway system and new highways or railways, both within and outside the National Forest, can create barriers to movement.

SCE's Antelope-Pardee 500 kV Transmission Project may cause a cumulative effect to mule deer along with BRRTP. Alternative 2a would be only about two miles west of the Antelope-Pardee Project at its closest point. The Antelope-Pardee Project's construction was expected to result in the temporary abandonment of deer territories due noise, increased human activity, and helicopter activity (Aspen 2006). These activities may also stress mountain lions not only because of deer abandoning the area, but because the activities may scare away the mountain lions as well.

SCE's TRTP will be partially built within the ANF and is expected to have an effect on mule deer. SCE estimates that 272 acres of mountain lion habitat will be impacted by the construction of the proposed project, comprising 0.04% of the total mountain lion habitat on the ANF (Aspen 2009). These types of

disturbance consist of but are not limited to tower construction; wire stringing; construction, maintenance, or improvement of access roads; and use of staging areas, landing pads, and support yards.

In April 2009, LADWP conducted unauthorized road grading along approximately five miles of City Highline Motorway Fire Road, a road that would provide partial access to Alternative 2a. This grading resulted in sediment in many RCAs and the trimming of numerous coast live oak trees, primarily in the Drinkwater Flat area, which may have a small and localized effect on the amount of available mast for mule deer to browse in this area. Any additional oak trimming that is necessary for construction passage during BR RTP would have a cumulative effect on the local quantity of forage in this area, indirectly affecting mountain lion habitat and prey suitability.

Cumulative Effects Conclusion

It is anticipated that implementation of Alternative 2a, in combination with these past, present, and reasonably foreseeable future actions, would result in the temporary loss of 103.32 acres and the permanent loss of 29.57 acres of mountain lion habitat in the analysis area. The temporary impact amount is equivalent to 0.02% of the total suitable mountain lion habitat available on the ANF, while the permanent impact amount is equivalent to $4.46 \times 10^{-3}\%$ of the total suitable mountain lion habitat available on the ANF. While temporary effects from Alternative 2a would not render the affected areas totally unsuitable for mountain lions, affected areas would be expected to provide habitat of less value than adjacent undeveloped areas.

Alternative 3

Direct and Indirect Effects

Suitable habitat for mountain lion occurs throughout the Project area. Since the Project area is expected to provide suitable habitat for mule deer, corresponding mountain lion use is also expected. Of the estimated 221.22 acres of suitable habitat within the analysis area for Alternative 3, the amount of mountain lion habitat that would be affected by Alternative 3 is 36.84 acres of temporary disturbance and 13.82 acres of permanent disturbance. Temporary disturbance represents 16.65% of the total suitable mountain lion habitat available within the analysis area for Alternative 3 and $5.56 \times 10^{-3}\%$ of the total suitable mountain lion habitat available on the ANF, while permanent disturbance represents 6.25% of the total suitable mountain lion habitat available within the analysis area for Alternative 3 and $2.08 \times 10^{-3}\%$ of the total suitable mountain lion habitat available on the ANF.

Existing vegetation would be removed on the 36.84 acres temporarily impacted by Project activities. Until native vegetation is recovered, this area would not provide suitable habitat for mountain lion. Once native vegetation is established, the area would provide suitable habitat for mountain lion. However, this vegetation would require several years to reach the conditions necessary for providing suitable habitat. Areas of permanent disturbance would not be revegetated and would be maintained as part of the transmission line's operation and maintenance activities.

Post-Project treatments would require efforts to ensure the establishment of native vegetation in areas of ground disturbance. If these efforts are not fully successful and there is an increased amount of invasive species, habitat values for the mule deer, the mountain lion's preferred prey base, would decrease. This would be especially true for the 0.69 forested acre of riparian habitat to be temporarily impacted on Alternative 3 ($2.34 \times 10^{-3}\%$ of the total riparian habitat on the ANF), as riparian areas are particularly important for mule deer and fawning. Improved habitat conditions for deer would benefit mountain lions by providing additional hunting opportunities.

Based on this, it is anticipated that Alternative 3 would result in temporary loss of 36.84 acres and permanent loss of 13.82 acres of suitable mountain lion habitat. Existing cover would be removed. Habitat values may be decreased if Project activities increase the distribution and abundance of invasive

plants. If the Project impacts the hydrology of intermittent streams in areas such as in Vasquez Canyon, where Project vehicles may pass directly through the streambed on Lost Creek Road to access tower locations, it could have a more long-term impact on riparian vegetation and availability of surface water. This would also be true for RCAs that may be affected by construction on Alternative 3. It is anticipated that five RCAs would be affected by construction on Alternative 3. Not all of these are immediately within the proposed Alternative 3 ROW, but are present on the ANF in areas where potential access roads, such as Lost Creek Road, would pass through the area.

Cumulative Effects

Because of their large home ranges, there are no past or future activities anticipated that would have significant cumulative effects on mountain lions or their habitat within the Forest. Influences to prey, such as hunting or diseases that affect mule deer population numbers, would probably have more effect on mountain lion numbers. Projects that are deemed to have cumulative effects on mule deer would likely have some effect on mountain lions as well on a local level.

Riparian habitat within the San Gabriel Mountains on federal and non-federal lands has been affected by development and water diversions and extractions over the years, reducing the quantity and quality of this habitat type. As such, impacts to mule deer populations likely have occurred due to reduction in habitat quality and quantity for fawning, water sources, and movement corridors. Demands on water, and thus riparian/meadow habitat, will likely continue to increase with increasing human populations. Since deer are the primary prey species for mountain lion, impacts to their populations will influence mountain lion use.

Annual hunting may have a cumulative effect on the resident mule deer population. Based on current deer hunting season dates, it is possible that BR RTP construction may be occurring at the same time as hunting season. This may cause deer to vacate the area and may result in slightly higher deer mortalities due to deer being stressed and attempting to avoid construction and hunters simultaneously. This may in turn have a negative effect on mountain lions, which rely mainly on mule deer for prey.

Proposed and planned housing developments within private inholdings and urban interface areas will result in a loss of habitat for mule deer. Increased recreation use in both dispersed and developed recreation areas will continue to affect the mule deer usage of these areas. Hunting and poaching pressures may also increase as human populations adjacent to the Forest increase with development. Additionally, associated increases in vehicle traffic will likewise result in more injuries and deaths of deer while also reducing the quality of movement corridors that are bisected by busier roadways. Increasing urbanization and agricultural pressure outside the forest boundary may reduce deer populations on the surrounding lands. As a result, mountain lions may attack more pets and livestock or otherwise threaten local communities, leading to more depredation killings.

Non-native plant removal and fuel management activities are planned throughout the Forest. Although the emphasis of these treatments is to reduce fuel hazards and non-native plants, it is anticipated that they may contribute to some improvement in deer habitat capability. Since deer are the primary prey species for mountain lion, treatments that benefit their populations will also benefit mountain lions. The various fuel reduction or fuelbreak projects that have occurred in the past or are proposed for the future at plantations within ANF may reduce deer habitat and/or drive deer from the area based on the act of thinning, pruning, chipping, or burning surrounding vegetation (USFS 2009 – 2010). It is expected, however, that over time mule deer and mountain lions would return to these areas as vegetation begins to grow again.

An area of concern has been the continued decline in permeability of the critical landscape linkages from the San Gabriel Mountains to the other adjacent mountain ranges that support mountain lions. Increased

widening of the existing highway system and new highways or railways, both within and outside the National Forest, can create barriers to movement.

SCE's Antelope-Pardee 500 kV Transmission Project may cause a cumulative effect to mule deer along with BRRTP. Alternative 3 would not be in the vicinity of the Antelope-Pardee Project within the ANF, although the ROWs would intersect in the mountains outside of the ANF. The Antelope-Pardee Project's construction was expected to result in the temporary abandonment of deer territories due noise, increased human activity, and helicopter activity (Aspen 2006). These activities may also stress mountain lions not only because of deer abandoning the area, but because the activities may scare away the mountain lions as well.

SCE's TRTP will be partially built within the ANF and is expected to have an effect on mule deer. SCE estimates that 272 acres of mountain lion habitat will be impacted by the construction of the proposed project, comprising 0.04% of the total mountain lion habitat on the ANF (Aspen 2009). These types of disturbance consist of but are not limited to tower construction; wire stringing; construction, maintenance, or improvement of access roads; and use of staging areas, landing pads, and support yards. Because Alternative 3 is the southeastern-most portion of BRRTP, it would be the closest to TRTP. However, the two forested project areas are on opposite sides of SR-14. There is a small area where the ROWs would parallel each other in the mountains just west of Palmdale, but this area is not in the ANF.

Cumulative Effects Conclusion

It is anticipated that implementation of Alternative 3, in combination with these past, present, and reasonably foreseeable future actions, would result in the temporary loss of 36.84 acres and the permanent loss of 13.82 acres of mountain lion habitat in the analysis area. The temporary impact amount is equivalent to $5.56 \times 10^{-3}\%$ of the total suitable mountain lion habitat available on the ANF, while the permanent impact amount is equivalent to $2.08 \times 10^{-3}\%$ of the total suitable mountain lion habitat available on the ANF. While temporary effects from Alternative 3 would not render the affected areas totally unsuitable for mountain lions, affected areas would be expected to provide habitat of less value than adjacent undeveloped areas.

Reconductoring

Direct and Indirect Effects

Suitable habitat for mountain lion occurs throughout the Project area. Since the Project area is expected to provide suitable habitat for mule deer, corresponding mountain lion use is also expected. Of the estimated 787.68 acres of suitable habitat within the analysis area for the reconductoring, the amount of mountain lion habitat that would be affected by the reconductoring is 85.84 acres of temporary disturbance and 36.31 acres of permanent disturbance. Temporary disturbance represents 10.91% of the total suitable mountain lion habitat available within the analysis area for the reconductoring and 0.01% of the total suitable mountain lion habitat available on the ANF, while permanent disturbance represents 4.61% of the total suitable mountain lion habitat available within the analysis area for the reconductoring and $5.48 \times 10^{-3}\%$ of the total suitable mountain lion habitat available on the ANF. The reconductoring would roughly parallel and be in close proximity to Alternative 2 throughout the ANF. Therefore, many of the areas that it would affect are similar to the Alternative 2 affected areas. However, because exact disturbance would be dependent on actual road and individual tower conditions at the time of construction, the disturbance numbers given above and the effects described below are based on the assumption that the reconductoring operation would cause a similar amount of disturbance on average as the construction of the new transmission line. Actual disturbance may be lower than what is projected here, but cannot be accurately estimated at this time.

Existing vegetation would be removed on the 85.84 acres temporarily impacted by Project activities. Until native vegetation is recovered, this area would not provide suitable habitat for mountain lion. Once native

vegetation is established, the area would provide suitable habitat for mountain lion. However, this vegetation would require several years to reach the conditions necessary for providing suitable habitat. Areas of permanent disturbance would not be revegetated and would be maintained as part of the transmission line's operation and maintenance activities.

Post-Project treatments would require efforts to ensure the establishment of native vegetation in areas of ground disturbance. If these efforts are not fully successful and there is an increased amount of invasive species, habitat values for the mule deer, the mountain lion's preferred prey base, would decrease. This would be especially true for the 9.60 forested acres of riparian habitat to be temporarily impacted in the reconductoring area (0.03% of the total riparian habitat on the ANF), as riparian areas are particularly important for mule deer and fawning. Improved habitat conditions for deer would benefit mountain lions by providing additional hunting opportunities.

Based on this, it is anticipated that reconductoring would result in temporary loss of 85.84 acres and permanent loss of 36.31 acres of suitable mountain lion habitat. Existing cover would be removed. Habitat values may be decreased if Project activities increase the distribution and abundance of invasive plants. If the Project impacts the hydrology of intermittent streams in areas such as in Dry Canyon or Baird Canyon or even perennial areas such as Drinkwater Flat, where Project vehicles may pass directly through streambeds on access roads or to access tower locations, it could have a more long-term impact on riparian vegetation and availability of surface water. This would also be true for RCAs that may be affected by construction within the reconductoring area. It is anticipated that approximately 50 RCAs would be affected by the reconductoring. Most of the impacted RCAs would be the same as those impacted by Alternative 2, but in the short isolated areas where the two ROWs diverge, there may be a small difference in the number of RCAs affected by construction. RCAs would be affected mainly due to insufficient road width. Some of these were already affected in April 2009 due to unauthorized grading by LADWP, which will be addressed further in the Cumulative Effects section.

Oak trees within the analysis area for the reconductoring may be reduced from forest stand composition, reducing the amount of mast available for fall deer forage and making mule deer, the mountain lion's primary prey, less likely to spend extensive time in these areas. This would be in areas such as Drinkwater Flat, the mouth of South Portal Canyon, and possibly also Bee Canyon, where coast live oak trees are prevalent and could possibly require trimming in order to allow safe passage of construction equipment. A temporary alternative transmission line would be required for construction of Alternative 2 around the Green Valley area to maintain power while the permanent structures are being upgraded. This temporary transmission line would be approximately 7.5 miles long from near LADWP's Power Plant 1 to just north of Johnson Road in Elizabeth Lake and would constitute 4.18 acres of temporary disturbance. The proposed corridor is located almost entirely directly adjacent to San Francisquito Canyon Road, and construction would predominantly occur in areas that are already disturbed or developed. Additionally, there are numerous oak trees lining San Francisquito Canyon Road in the Green Valley area and, although this is a more developed area of the canyon, these trees could be affected by reconductoring activity parallel to the roadway. However, GPs included in Section 4.4 and the BR RTP DEIS/EIR (USFS, BLM and LADWP 2011) provide for measures that would work to minimize loss of mast-producing coast live oaks. The reduction of trees and browse shrubs from the Project is not expected to limit forage significantly due to the small footprint typical of linear energy transmission projects. In addition, temporary disturbance would likely result in a short-term improvement in forage quality in decadent brushlands and other late-successional areas. An additional expected benefit of the Project is the improvement of the ratio of vegetative mosaics in dense chaparral cover.

Cumulative Effects

Because of their large home ranges, there are no past or future activities anticipated that would have significant cumulative effects on mountain lions or their habitat within the Forest. Influences to prey, such

as hunting or diseases that affect mule deer population numbers, would probably have more effect on mountain lion numbers. Projects that are deemed to have cumulative effects on mule deer would likely have some effect on mountain lions, as well, on a local level.

Riparian habitat within the San Gabriel Mountains on federal and non-federal lands has been affected by development and water diversions and extractions over the years, reducing the quantity and quality of this habitat type. As such, impacts to mule deer populations likely have occurred due to reduction in habitat quality and quantity for fawning, water sources, and movement corridors. Demands on water, and thus riparian/meadow habitat, will likely continue to increase with increasing human populations. Since deer are the primary prey species for mountain lion, impacts to their populations will influence mountain lion use.

Annual hunting may have a cumulative effect on the resident mule deer population. Based on current deer hunting season dates, it is possible that BRRTP construction may be occurring at the same time as hunting season. This may cause deer to vacate the area and may result in slightly higher deer mortalities due to deer being stressed and attempting to avoid construction and hunters simultaneously. This may in turn have a negative effect on mountain lions, which rely mainly on mule deer for prey.

Proposed and planned housing developments within private inholdings and urban interface areas will result in a loss of habitat for mule deer. Increased recreation use in both dispersed and developed recreation areas will continue to affect the mule deer usage of these areas. Hunting and poaching pressures may also increase as human populations adjacent to the Forest increase with development. Additionally, associated increases in vehicle traffic will likewise result in more injuries and deaths of deer while also reducing the quality of movement corridors that are bisected by busier roadways. Increasing urbanization and agricultural pressure outside the forest boundary may reduce deer populations on the surrounding lands. As a result, mountain lions may attack more pets and livestock or otherwise threaten local communities, leading to more depredation killings.

Non-native plant removal and fuel management activities are planned throughout the Forest. Although the emphasis of these treatments is to reduce fuel hazards and non-native plants, it is anticipated that they may contribute to some improvement in deer habitat capability. Since deer are the primary prey species for mountain lion, treatments that benefit their populations will also benefit mountain lions. The various fuel reduction or fuelbreak projects that have occurred in the past or are proposed for the future at plantations within the ANF may reduce deer habitat and/or drive deer from the area based on the act of thinning, pruning, chipping, or burning surrounding vegetation (USFS 2009 – 2010). It is expected, however, that over time mule deer and mountain lions would return to these areas as vegetation begins to grow again.

An area of concern has been the continued decline in permeability of the critical landscape linkages from the San Gabriel Mountains to the other adjacent mountain ranges that support mountain lions. Increased widening of the existing highway system and new highways or railways, both within and outside the National Forest, can create barriers to movement.

SCE's Antelope-Pardee 500 kV Transmission Project may cause a cumulative effect to mule deer along with BRRTP. The reconductoring area would be only about two miles west of the Antelope-Pardee Project at its closest point. The Antelope-Pardee Project's construction was expected to result in the temporary abandonment of deer territories due noise, increased human activity, and helicopter activity (Aspen 2006). These activities may also stress mountain lions not only because of deer abandoning the area, but because the activities may scare away the mountain lions as well.

In April 2009, LADWP conducted unauthorized road grading along approximately five miles of City Highline Motorway Fire Road, a road that would provide partial access to the reconductoring area. This

grading resulted in sediment in many RCAs and the trimming of numerous coast live oak trees, primarily in the Drinkwater Flat area, which may have a small and localized effect on the amount of available mast for mule deer to browse in this area. Any additional oak trimming that is necessary for construction passage during BRRTP would have a cumulative effect on the local quantity of forage in this area, indirectly affecting mountain lion habitat and prey suitability.

Cumulative Effects Conclusion

It is anticipated that reconductoring of the existing transmission line, in combination with these past, present, and reasonably foreseeable future actions, would result in the temporary loss of 85.84 acres and the permanent loss of 36.31 acres of mountain lion habitat in the analysis area. The temporary impact amount is equivalent to 0.01% of the total suitable mountain lion habitat available on the ANF, while the permanent impact amount is equivalent to $5.48 \times 10^{-3}\%$ of the total suitable mountain lion habitat available on the ANF. While temporary effects from the reconductoring would not render the affected areas totally unsuitable for mountain lions, affected areas would be expected to provide habitat of less value than adjacent undeveloped areas.

New 230 kV Circuit

Direct and Indirect Effects

Suitable habitat for mountain lion occurs throughout the Project area. Since the Project area is expected to provide suitable habitat for mule deer, corresponding mountain lion use is also expected. Of the estimated 210.24 acres of suitable habitat within the analysis area for the new circuit, the amount of mountain lion habitat that would be affected by the new circuit is 30.66 acres of temporary disturbance and 10.58 acres of permanent disturbance. Temporary disturbance represents 14.58% of the total suitable mountain lion habitat available within the analysis area for the new circuit and approximately $4.62 \times 10^{-3}\%$ of the total suitable mountain lion habitat available on the ANF, while permanent disturbance represents 5.03% of the total suitable mountain lion habitat available within the analysis area for the new circuit and $1.60 \times 10^{-3}\%$ of the total suitable mountain lion habitat available on the ANF. The forested portion and much of the non-forested portion of the new circuit would parallel Alternative 1. Therefore, many of the areas that it would affect within the ANF are similar to the Alternative 1 affected areas. However, because exact disturbance would be dependent on actual road and individual tower conditions at the time of construction, the disturbance numbers given above and the effects described below are based on the assumption that installation of the new circuit would cause a similar amount of disturbance on average as the construction of the new Alternative 1 transmission line. Actual disturbance may be lower than what is projected here, but cannot be accurately estimated at this time.

Existing vegetation would be removed on the 30.66 acres temporarily impacted by Project activities. Until native vegetation is recovered, this area would not provide suitable habitat for mountain lion. Once native vegetation is established, the area would provide suitable habitat for mountain lion. However, this vegetation would require several years to reach the conditions necessary for providing suitable habitat. Areas of permanent disturbance would not be revegetated and would be maintained as part of the transmission line's operation and maintenance activities.

Post-Project treatments would require efforts to ensure the establishment of native vegetation in areas of ground disturbance. If these efforts are not fully successful and there is an increased amount of invasive species, habitat values for the mule deer, the mountain lion's preferred prey base, would decrease. This would be especially true for the 1.65 forested acres of riparian habitat to be temporarily impacted in the new circuit area (0.01% of the total riparian habitat on the ANF), as riparian areas are particularly important for mule deer and fawning. Improved habitat conditions for deer would benefit mountain lions by providing additional hunting opportunities.

Based on this, it is anticipated that the new circuit would result in temporary loss of 30.66 acres and permanent loss of 10.58 acres of suitable mountain lion habitat. Existing cover would be removed. Habitat values may be decreased if Project activities increase the distribution and abundance of invasive plants. If the Project impacts the hydrology of intermittent streams in areas such as in Charlie Canyon, where Project vehicles may pass directly through the streambed on access roads or to access tower locations, it could have a more long-term impact on riparian vegetation and availability of surface water. This would also be true for RCAs that may be affected by installation of the new circuit. It is expected that one RCA on the ANF may be affected by construction. There are numerous other streambed crossings outside of the forest, such as in Charlie Canyon, but these are not within the ANF.

Cumulative Effects

Because of their large home ranges, there are no past or future activities anticipated that would have significant cumulative effects on mountain lions or their habitat within the Forest. Influences to prey, such as hunting or diseases that affect mule deer population numbers, would probably have more effect on mountain lion numbers. Projects that are deemed to have cumulative effects on mule deer would likely have some effect on mountain lions, as well, on a local level.

Riparian habitat within the San Gabriel Mountains on federal and non-federal lands has been affected by development and water diversions and extractions over the years, reducing the quantity and quality of this habitat type. As such, impacts to mule deer populations likely have occurred due to reduction in habitat quality and quantity for fawning, water sources, and movement corridors. Demands on water, and thus riparian/meadow habitat, will likely continue to increase with increasing human populations. Since deer are the primary prey species for mountain lion, impacts to their populations will influence mountain lion use.

Annual hunting may have a cumulative effect on the resident mule deer population. Based on current deer hunting season dates, it is possible that BRRTP construction may be occurring at the same time as hunting season. This may cause deer to vacate the area and may result in slightly higher deer mortalities due to deer being stressed and attempting to avoid construction and hunters simultaneously. This may in turn have a negative effect on mountain lions, which rely mainly on mule deer for prey.

Proposed and planned housing developments within private inholdings and urban interface areas will result in a loss of habitat for mule deer. Increased recreation use in both dispersed and developed recreation areas will continue to affect the mule deer usage of these areas. Hunting and poaching pressures may also increase as human populations adjacent to the Forest increase with development. Additionally, associated increases in vehicle traffic will likewise result in more injuries and deaths of deer while also reducing the quality of movement corridors that are bisected by busier roadways. Increasing urbanization and agricultural pressure outside the forest boundary may reduce deer populations on the surrounding lands. As a result, mountain lions may attack more pets and livestock or otherwise threaten local communities, leading to more depredation killings.

Non-native plant removal and fuel management activities are planned throughout the Forest. Although the emphasis of these treatments is to reduce fuel hazards and non-native plants, it is anticipated that they may contribute to some improvement in deer habitat capability. Since deer are the primary prey species for mountain lion, treatments that benefit their populations will also benefit mountain lions. The various fuel reduction or fuelbreak projects that have occurred in the past or are proposed for the future at plantations within the ANF may reduce deer habitat and/or drive deer from the area based on the act of thinning, pruning, chipping, or burning surrounding vegetation (USFS 2009 – 2010). It is expected, however, that over time mule deer and mountain lions would return to these areas as vegetation begins to grow again.

An area of concern has been the continued decline in permeability of the critical landscape linkages from the San Gabriel Mountains to the other adjacent mountain ranges that support mountain lions. Increased widening of the existing highway system and new highways or railways, both within and outside the National Forest, can create barriers to movement.

SCE's Antelope-Pardee 500 kV Transmission Project may cause a cumulative effect to mule deer along with BRRTP. Within the ANF, the new circuit would be near the Antelope-Pardee Project only at its southern terminus, just north of the proposed Haskell Canyon Switching Station, a separation of approximately one mile. The Antelope-Pardee Project's construction was expected to result in the temporary abandonment of deer territories due noise, increased human activity, and helicopter activity (Aspen 2006). These activities may also stress mountain lions not only because of deer abandoning the area, but because the activities may scare away the mountain lions as well.

Cumulative Effects Conclusion

It is anticipated that installation of the new circuit, in combination with these past, present, and reasonably foreseeable future actions, would result in the temporary loss of 30.66 acres and the permanent loss of 10.58 acres of mountain lion habitat in the analysis area. The temporary impact amount is equivalent to $4.62 \times 10^{-3}\%$ of the total suitable mountain lion habitat available on the ANF, while the permanent impact amount is equivalent to $1.60 \times 10^{-3}\%$ of the total suitable mountain lion habitat available on the ANF. While temporary effects from installation of the new circuit would not render the affected areas totally unsuitable for mountain lions, affected areas would be expected to provide habitat of less value than adjacent undeveloped areas.

7.2.4 Summary of Habitat and Population Status and Trend at the Forest Scale

For monitoring, the Forest Service FEIS (USFS 2005b, Volume 2, page 77) identifies studies in cooperation with CDFG and USGS. Trends would be measured in distribution movement and/or habitat conditions. The sections below summarize the habitat and population status and trend data for the mountain lion. This information is drawn from the detailed information on habitat and population trends in the ANF MIS Report (USFS 2008), which is hereby incorporated by reference.

- *Habitat Status and Trend*
Not utilized as the primary monitoring tool for mountain lion on the ANF.
- *Population Status and Trend at the Forest Scale*
CDFG is responsible for management of mountain lion populations. Based on records of depredation, attacks on people, and predation on prey populations, it is suspected that the statewide population peaked in 1996, and has been somewhat stable for the past several years (CDFG 2006b). The following statistics from the CDFG website summarize depredation permits issued by county (CDFG 2010c, CDFG 2010d). Between 2000 and 2009, there were only ten depredation permits issued for mountain lions within Los Angeles County, four of which were killed. From 1990 to 1999, six mountain lions were depredated under the 18 depredation permits issued in Los Angeles County. When hunting for mountain lion was legal in California, three depredation permits were issued from 1980 to 1989 and zero mountain lions were taken. Only one depredation permit was issued from 1972 to 1979, which did not have a corresponding kill.

CDFG has described the mountain lion population in California as stable. Further estimates are zero to ten mountain lions per 100 square miles based on available habitat within the state (CDFG 2007). The ANF has some large areas of unfragmented habitat ideal for supporting mountain lion populations. Thus, mountain lion populations within the San Gabriel Mountains are considered stable. Detailed information on these population data is presented in the ANF MIS Report (USFS 2008).

7.2.5 Relationship of Project-Level Impacts to Forest Scale Habitat and Population Trends for the Species

Mountain lion are found throughout the ANF (662,983 acres). Areas impacted by Project activities would not initially provide suitable habitat for mountain lion or their preferred prey base, mule deer. However, with successful implementation of restoration efforts, the Project area would be expected to provide suitable mountain lion habitat in the future (more than five years). The Project would not eliminate corridor linkages for mountain lion within the ANF. The Project-level habitat impacts would not alter or contribute to the existing forest-wide population trends for the mountain lion.

7.3 ARROYO TOAD (*ANAXYRUS CALIFORNICUS*)

7.3.1 Habitat/Species Relationship

The arroyo toad was selected as an MIS to indicate health of low-elevation riparian and aquatic ecosystems. Trends in populations, stream occupancy, and habitat condition are used as indicators of the effectiveness of management actions in conserving these ecosystems. Short-term fluctuations in arroyo toad populations may not clearly indicate the effects of management actions because of the strong correlation between weather patterns and toad populations. However, long-term trends in arroyo toad populations and habitat should reflect whether management activities and strategies have been successful in improving habitat conditions for toads and other aquatic and riparian-dependent species that are susceptible to high levels of human disturbance. The habitat condition desired by the ANF LMP is that flow regimes in streams that provide appropriate habitat for the arroyo toad be sufficient to allow the species to remain extant and individuals to complete its life cycles (USFS 2008).

Arroyo toads are known from Monterey County south to Baja California, and have extremely specialized habitat requirements (CDFG 2005). They are restricted to either perennial or intermittent streams and rivers with shallow, gravelly pools adjacent to sandy slopes (USFS 2008, SCE and GANDA 2006), with scattered surrounding vegetation consisting of mulefat, willows, cottonwoods, and/or sycamores or coast live oaks (Stebbins 2003, InfoNatura 2007). The streams should be slow-moving and preferably naturally disturbed on a regular basis, such as by flooding (USFWS 2000). Foraging is often conducted around the driplines of oak trees, focusing predominantly on ant trails (USFS 2008).

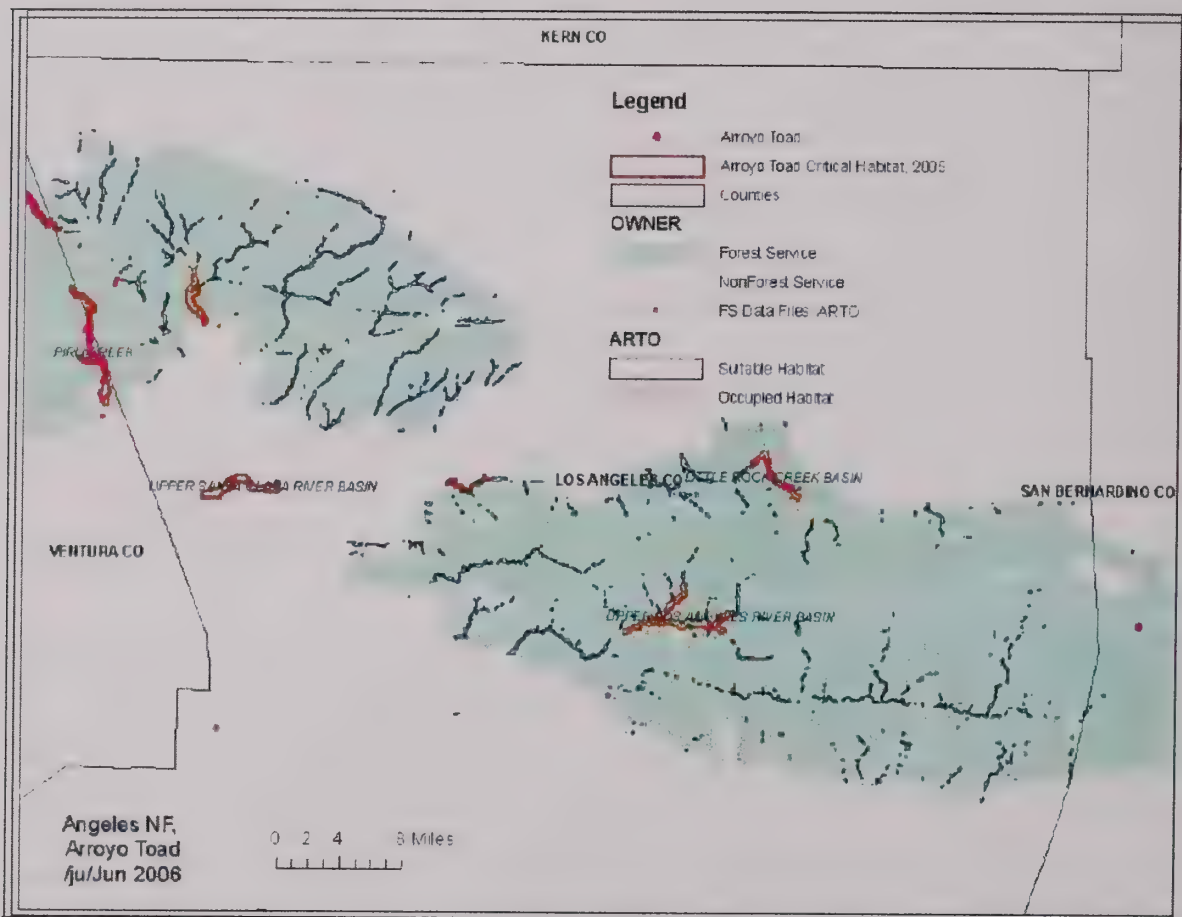
Several factors have resulted in the decline of arroyo toads within their range, which is currently estimated to be approximately 25% of their historic range (USFWS 2009). Water availability is a concern for populations that are present just downstream of major dams or near wells that may draw down surface water (USFS 2008, Stephenson and Calcarone 1999). Non-native wildlife species, such as bullfrogs, green sunfish, largemouth bass, or crayfish, have been known to eat arroyo toads of all age classes from larvae to adult (USFS 2008). Non-native plant species, such as tamarisk (*Tamarix* spp.) and giant reed (*Arundo donax*), can form dense stands relatively quickly and, in addition to stabilizing stream terraces, have higher evapo-transpiration rates than native vegetation, decreasing water availability (Stephenson and Calcarone 1999). Campgrounds, roads, trails, off-highway vehicle use, and livestock grazing near arroyo toad breeding pools can result in egg strands being crushed or disturbed (USFS 2008). All of these factors can and have resulted in a decline to toad populations in California.

As of 2009, there are 23 known arroyo toad populations in California, including populations within all four Southern California National Forests, where approximately 36% of the total population resides (USFWS 2009). In the ANF, there are three known active populations encompassing an estimated 4,000 acres of occupied habitat (USFWS 2009). Arroyo toads occur along Castaic Creek; along Big Tujunga Creek, including associated lower reaches of Mill and Alder Creeks; and on the desert side of the San Gabriel Mountains along Little Rock Creek (USFS 2008). A fourth population has historically been

known to occur along Arroyo Seco, but it is believed that this population has since been extirpated (USFWS 2009).

Of these three remaining populations, only Castaic Creek is located in proximity to the Project area. The Castaic Creek area was designated in February 2011 as arroyo toad critical habitat (76 FR 7245 7467). Focused surveys for the BRRTTP conducted in 2008 and 2009 determined that suitable habitat exists in various areas along San Francisquito Canyon, Dry Canyon, and Haskell Canyon. However, arroyo toads were not detected at these locations and are only known to be present in Castaic Creek in the Project's vicinity. No current arroyo toad population counts for ANF are available, although known occurrences can be seen in Figure 10, a diagram made by the Forest Service of known arroyo toad habitat and occurrences (USFS 2008).

FIGURE 10. ARROYO TOAD FOREST SERVICE DATA POINTS, SUITABLE HABITAT, AND OCCUPIED HABITAT



Source: USFS 2008.

Suitable arroyo toad habitat is uncommon within the BRRTTP area, and is found more commonly in adjacent areas or in other ANF ranger districts. Areas of suitable habitat may be found in Castaic Creek immediately north of the termination of the proposed new circuit, and in Dry Creek and portions of San Francisquito Creek near Alternative 2. All of these areas include streambeds with a gravel/sandy substrate.

7.3.2 Project-level Effects Analysis Based on Habitat

Key Habitat Factor(s) for the Analysis: According to the Forest Service FEIS (USFS 2005b, Volume 2, page 77), sustained quality and quantity of suitable riparian and aquatic habitat types are key to the health of arroyo toad populations. Therefore, riparian habitat within the Project area is considered potentially suitable habitat that could be potentially impacted by the Project.

Analysis Area for Project-level Effects Analysis: The analysis area for direct, indirect, and cumulative effects of the BR RTP on arroyo toads varies according to Project components, which overlap and encompass different vegetation areas. Because the Forest Service FEIS (USFS 2005b, Volume 2, page 77) considers aquatic and riparian habitat to be suitable for arroyo toads, all riparian habitat types are taken into account for disturbance estimates. However, because the arroyo toad suitable habitat is actually very specific and is also determined by many microhabitat features, estimates of suitable arroyo toad habitat within the Project area based on the availability of general riparian habitat types is likely an overestimate of the amount of suitable habitat within the Project area and its vicinity. Total acreage of riparian habitat within each BR RTP alternative or component on the ANF is presented in Table 10. These calculations are based on the 500-foot wide corridor and include projected habitat disturbance from construction staging areas and access roads.

TABLE 10. TOTAL ARROYO TOAD HABITAT ACREAGE OF EACH BR RTP COMPONENT ON ANF AND PERCENTAGE OF TOTAL ANF

	ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 2A	ALTERNATIVE 3	RECONDUCTORING	NEW CIRCUIT
Total Acres of Suitable Arroyo Toad Habitat within the Analysis Area	26.92	46.84	41.84	6.47	87.31	15.38
Percentage of Total Riparian Habitat on the ANF (29,464 acres)	0.09%	0.16%	0.14%	0.02%	0.30%	0.05%
Total Acres of Suitable Arroyo Toad Habitat Impacted within the Analysis Area*	3.71	7.76	7.53	1.03	14.13	2.22
Percentage Impacted of Total Riparian Habitat on the ANF (29,464 acres)	0.01%	0.03%	0.03%	3.50 x 10 ⁻³ %	0.05%	0.01%

Current Condition of the Key Habitat Factor(s) in the Analysis Area: The percentage of the total arroyo toad habitat for each component relative to the total ANF is above in Table 10.

7.3.3 Direct and Indirect Effects to Arroyo Toad

It is not expected that the BR RTP would have any significant direct or indirect effects on arroyo toads or arroyo toad habitat. The only known population of arroyo toads in the Project area occurs within Castaic Creek north of the Elderberry Forebay. While the new circuit would terminate at Castaic Power Plant, there would be no construction within the creekbed. No arroyo toads were located during surveys conducted during the 2008 and 2009 breeding seasons (POWER 2010a). While suitable habitat is located along various Project components, it is expected that impacts would be mostly avoided, as no-construction buffers would be implemented around RCAs as follows:

- One-mile buffer around known arroyo toad occurrences;
- Any 100-year recurrence interval floodplain boundaries;
- 328 feet (100 meters) from each edge of perennial streams and lakes/reservoirs; and
- 98 feet (30 meters) from each edge of seasonally-flowing/intermittent streams.

However, this does not avoid the possibility that RCAs may be affected by continual vehicle use, especially following any rain events. Additionally, RCAs may be affected if it is deemed that they are currently unsuitable for Project access due to insufficient width or unacceptable road conditions. In these cases the roads through these RCAs would be improved to be suitable for use by Project vehicles and equipment.

Apart from impacts to RCAs and/or suitable habitat, the only foreseeable direct effect to arroyo toads would be direct collision or crushing by the construction crew. This could occur due to vehicles, foot traffic, or actual construction. However, all construction would be distanced from stream edges, reducing the likelihood of any toads being present unless they happen to be actively foraging. Also, adult toads are primarily active at night, and are unlikely to be active during construction hours (USFWS 1999). Additionally, while juvenile toads are active diurnally for their first four to five weeks, they are unlikely to leave streambeds due to predation and will generally stay within sandy or gravelly areas of streams, reducing the likelihood that they would be encountered during construction (USFWS 1999). Finally, there are no known arroyo toad populations within the Project vicinity except north of the Castaic Power Plant within Castaic Creek, and BR RTP construction would not occur within Castaic Creek.

One indirect effect to arroyo toad habitat that may result from construction is the spread of non-native species. Tamarisk and giant reed constitute two of the largest threats to arroyo toads among non-native plant species, as they can eliminate sandbars, breeding pools, and upland habitats (USFWS 2009). Vehicles serve as efficient methods of seed dispersal, and it is possible that non-native seeds may become attached to Project vehicles and equipment, allowing them to move quickly up or down an access road and into a new area. Additionally, any potential leaks from vehicles into stream courses may cause habitat degradation, lowering the quality of suitable arroyo toad habitat.

Alternative 1

Direct and Indirect Effects

Suitable habitat for arroyo toad occurs in various streambeds and drainages throughout the entire Project area. Of the estimated 26.92 acres of riparian habitat within the analysis area on Alternative 1, the amount that would be affected by transmission line construction, operation, and maintenance is 2.79 acres of temporary disturbance and 0.92 acre of permanent disturbance. Temporary disturbance represents 10.36% of the total riparian habitat available within the analysis area for Alternative 1 and 0.01% of the total riparian habitat available on the ANF, while permanent disturbance represents 3.42% of the riparian habitat available within the analysis area for Alternative 1 and $3.12 \times 10^{-3}\%$ of the total riparian habitat available on the ANF.

Post-Project treatments would require efforts to ensure the establishment of native vegetation in areas of ground disturbance. If these efforts are not fully successful and there is an increased amount of invasive species in riparian habitat, habitat values for the arroyo toad would decrease. Impacts to vegetation in the vicinity of riparian areas may affect the quality of foraging habitat for arroyo toad. While arroyo toads will forage around and under chaparral, mulefat, or willow thickets as prey availability allows, they are most often found around the drip lines of coast live oak trees, where prey is usually abundant (USFWS 1999). Additionally, impacts to upland habitat may directly or indirectly affect arroyo toad overwintering habitat, although the ecology of their overwintering sites is not well known other than that burrowing typically occurs in stream terraces or in the area between the channel and terraces (USFWS 1999, USFWS 2009).

Based on this, it is anticipated that construction on Alternative 1 would result in temporary loss of 2.79 acres and permanent loss of 0.92 acre of riparian habitat that may be suitable for arroyo toad. Habitat values may be decreased if Project activities increase the distribution and abundance of invasive plants. If the Project impacts the hydrology of intermittent streams in areas such as Liebre Gulch or Charlie

Canyon, where Project vehicles may pass directly through streambeds to access tower locations, it could have a more long-term impact on riparian vegetation and availability of surface water. It is anticipated that upwards of 100 RCAs would be affected on Alternative 1, mainly due to insufficient road width, which in many cases is a result of vegetation overgrowth along Edison Spring Road and particularly along the Old Ridge Route. For several areas within the ANF along Alternative 1, the Forest Service would require that the new double-circuit 230 kV structures be constructed by helicopter. Refer to Figure 9, the Helicopter Mitigation Map, which illustrates the locations. The use of helicopters for the construction of transmission tower structures would eliminate the need for new access roads to structure locations, and would therefore minimize land disturbance associated with crane pads, structure laydown areas, and the trucks and tractors used for delivery of structures to sites. The use of helicopter construction would also limit the number of RCAs that could potentially be impacted by the access road construction.

During protocol arroyo toad surveys for the BR RTP, one survey site with arroyo toad habitat suitability was visited on Alternative 1 over the course of the 2008 and 2009 survey seasons. No arroyo toads were identified at this site, which was located within the West Fork of Liebre Gulch (POWER 2010a). However, there are several crossing points directly within the streambed of the West Fork and the main Liebre Gulch. Two additional survey sites were identified in San Francisquito Creek in 2008 and 2009 in the area where Alternative 1 would cross overhead. These two sites were not located on NFS lands, but were surveyed for presence due to indirect impacts that could occur from the overhead presence of the proposed transmission line. No arroyo toads were identified at these two sites. Extensive vehicular crossings may alter the microhabitat, especially if there is water in the crossings during construction, and could affect water retention or flow qualities of these areas, potentially also affecting areas downstream. Any incidental effects from construction, such as vehicle fluid leaks, loss of breeding or foraging habitat, spread of non-native vegetation seeds, or particularly soil compaction, would negatively affect riparian and arroyo toad habitat quality.

Cumulative Effects

SCE's Antelope-Pardee 500 kV Transmission Project identified a high potential for arroyo toad to occur within its project area. The CNDDDB lists an arroyo toad record approximately 1.5 miles south of the Antelope-Pardee ROW at San Francisquito Creek (CDFG 2011); in addition, there is designated critical habitat for this species located in the Santa Clara River. Possible project impacts considered by Antelope-Pardee included impacts to breeding habitat due to construction work adjacent to San Francisquito Creek or due to crews carrying transmission lines or equipment across the creek on foot; crushing from equipment; disruption of breeding activity; take of toads, egg strands, or larvae; indirect mortality by causing toads to vacate the area; increased predation; habitat alteration and/or degradation as a result of changes in water flows or leaks from vehicles; or loss of upland habitat (Aspen 2006). BR RTP is not expected to have as many of the same impacts as the Antelope-Pardee Project due to the unlikely possibility of arroyo toads occurring within the BR RTP area, and the population in Castaic Creek is different from the population that may be in San Francisquito Creek near the Antelope-Pardee Project ROW. However, any impact to arroyo toad individuals or habitat that may occur during BR RTP's construction would cumulatively affect the regional population of arroyo toads.

The ANF is proposing to extend its efforts at invasive plant removal with its Santa Clara River Watershed Invasive Plant Treatment Project. While the ANF conducted removal of giant reed between 1995 and 2005, the ANF has proposed to extend the scope of the removal activities to include other non-native species such as tamarisk (*Tamarix* sp.), tree-of-heaven (*Ailanthus altissima*), yellow star thistle (*Centaurea solstitialis*), and tree tobacco (*Nicotiana glauca*), among others (USFS 2010a, USFS 2010b). Removal methods being considered include biological control, manual or mechanical removal, burning, or herbicide use. Specific removal methods will be determined for each site, but it is likely that removing non-native plant species, particularly within streambed areas that have extensive invasive species composition, will benefit arroyo toads and their habitat. The Forest Service will enforce all necessary

mitigation measures for sensitive species as outlined in the project's Purpose and Need and Proposed Action Statement (USFS 2010b).

Pacific Pipeline is proposing to relocate several miles of its crude oil lines to more stable ground following heavy winter storms in 2005 (USFS 2009 – 2010). This may affect arroyo toad habitat depending on specific relocation areas, but is unlikely to affect individual toads due to the lack of known occurrences in the general project area.

Cumulative Effects Conclusion

It is anticipated that construction of Alternative 1, in combination with these past, present, and reasonably foreseeable future actions, would result in the temporary loss of 2.79 acres and the permanent loss of 0.92 acre of arroyo toad habitat in the analysis area. The temporary impact amount is equivalent to 0.01% of the total riparian habitat available within the ANF, while the permanent impact amount is equivalent to $3.12 \times 10^{-3}\%$ of the total suitable riparian available within the ANF. While temporary effects from Alternative 1 would not render the affected areas totally unsuitable for arroyo toads, affected areas would be expected to provide habitat of less value than adjacent undeveloped areas.

Alternative 2

Direct and Indirect Effects

Suitable habitat for arroyo toad occurs in various streambeds and drainages throughout the entire Project area. Of the estimated 46.84 acres of riparian habitat within the analysis corridor along Alternative 2, the amount that would be affected by transmission line construction, operation, and maintenance is 6.24 acres of temporary disturbance and 1.52 acres of permanent disturbance. Temporary disturbance represents 13.32% of the total riparian habitat within the analysis area for Alternative 2 and 0.02% of the total riparian habitat available on the ANF, while permanent disturbance represents 3.25% of the total riparian habitat within the analysis area for Alternative 2 riparian habitat and $5.16 \times 10^{-3}\%$ of the total riparian habitat available on the ANF.

Post-Project treatments would require efforts to ensure the establishment of native vegetation in areas of ground disturbance. If these efforts are not fully successful and there is an increased amount of invasive species in riparian habitat, habitat values for the arroyo toad would decrease. Impacts to vegetation in the vicinity of riparian areas may affect the quality of foraging habitat for arroyo toad. While arroyo toads will forage around and under chaparral, mulefat, or willow thickets as prey availability allows, they are most often found around the drip lines of coast live oak trees, where prey is usually abundant (USFWS 1999). Additionally, impacts to upland habitat may directly or indirectly affect arroyo toad overwintering habitat, although the ecology of their overwintering sites is not well known other than that burrowing typically occurs in stream terraces or in the area between the channel and terraces (USFWS 1999, USFWS 2009).

Based on this, it is anticipated that construction on Alternative 2 would result in temporary loss of 6.24 acres and permanent loss of 1.52 acres of riparian habitat that may be suitable for arroyo toad. Habitat values may be decreased if Project activities increase the distribution and abundance of invasive plants. If the Project impacts the hydrology of intermittent streams in areas such as in Dry Canyon or Baird Canyon or even perennial areas such as Drinkwater Flat, where Project vehicles may pass directly through streambeds on access roads or to access tower locations, it could have a more long-term impact on riparian vegetation and availability of surface water. This would also be true for RCAs that may be affected by construction on Alternative 2. It is anticipated that 50 RCAs would be affected on Alternative 2, mainly due to insufficient road width. Within the ANF where the terrain is steep and access is limited, the Forest Service would require that the new double-circuit 230 kV structures be constructed by the use of helicopter.

During protocol arroyo toad surveys for the BR RTP, two survey sites with arroyo toad habitat suitability were visited on Alternative 2 within the Drinkwater Flat area over the course of the 2008 and 2009 survey seasons (POWER 2010a). Several other sites were visited in San Francisquito Canyon, which were not within the ROW, but were within a one-mile radius of the ROW that was surveyed due to potential for indirect effects. No arroyo toads were identified at any these sites, although other anurans including Pacific treefrog (*Pseudacris regilla*), California treefrog (*Pseudacris cadaverina*), and western toad (*Bufo boreas*) were often present in various life stages. Any incidental effects from construction, such as vehicle fluid leaks, loss of breeding or foraging habitat, spread of non-native vegetation seeds, or particularly soil compaction, would negatively affect riparian and potential arroyo toad habitat quality.

Cumulative Effects

In April 2009, LADWP conducted unauthorized road grading along City Highline Road, a road that would provide partial access to Alternative 2. The grading along this road passed through 26 mapped RCAs. While arroyo toad protocol surveys were conducted in this area in 2008 and 2009 for the BR RTP, only two survey sites were within the graded area (POWER 2010a). Neither of these sites was located immediately adjacent to the road and they are not expected to have been affected by the grading. As such, this grading action, despite affecting individual RCAs, is not expected to have affected any RCAs that would be conducive to supporting arroyo toad, and therefore is unlikely to have affected arroyo toad or its habitat and would have no cumulative effects with any corresponding effects of the BR RTP.

SCE's Antelope-Pardee 500 kV Transmission Project identified a high potential for arroyo toad to occur within its project area. The CNDDDB lists an arroyo toad record approximately 1.5 miles south of the Antelope-Pardee ROW at San Francisquito Creek (CDFG 2011); in addition, there is designated critical habitat for this species located in the Santa Clara River. Possible project impacts considered by Antelope-Pardee included impacts to breeding habitat due to construction work adjacent to San Francisquito Creek or due to crews carrying transmission lines or equipment across the creek on foot; crushing from equipment; disruption of breeding activity; take of toads, egg strands, or larvae; indirect mortality by causing toads to vacate the area; increased predation; habitat alteration and/or degradation as a result of changes in water flows or leaks from vehicles; or loss of upland habitat (Aspen 2006). BR RTP is not expected to have as many of the same impacts as the Antelope-Pardee Project due to the unlikely possibility of arroyo toads occurring within the Alternative 2 area. However, any impact to arroyo toad individuals or habitat that may occur during BR RTP's construction would cumulatively affect the regional population of arroyo toads.

The ANF is proposing to extend its efforts at invasive plant removal with its Santa Clara River Watershed Invasive Plant Treatment Project. While the ANF conducted removal of giant reed between 1995 and 2005, the ANF has proposed to extend the scope of the removal activities to include other non-native species such as tamarisk (*Tamarix* sp.), tree-of-heaven (*Ailanthus altissima*), yellow star thistle (*Centaurea solstitialis*), and tree tobacco (*Nicotiana glauca*), among others (USFS 2010a, USFS 2010b). Removal methods being considered include biological control, manual or mechanical removal, burning, or herbicide use. Specific removal methods will be determined for each site, but it is likely that removing non-native plant species, particularly within streambed areas that have extensive invasive species composition, will benefit arroyo toads and their habitat. The Forest Service will enforce all necessary mitigation measures for sensitive species as outlined in the project's Purpose and Need and Proposed Action Statement (USFS 2010b).

Cumulative Effects Conclusion

It is anticipated that construction of Alternative 2, in combination with these past, present, and reasonably foreseeable future actions, would result in the temporary loss of 6.24 acres and the permanent loss of 1.52 acres of arroyo toad habitat in the analysis area. The temporary impact amount is equivalent to 0.02% of the total riparian habitat available on the ANF, while the permanent impact amount is equivalent to 5.16 x

10⁻³% of the total riparian habitat available on the ANF. While temporary effects from the Proposed Action would not render the affected areas totally unsuitable for arroyo toads, affected areas would be expected to provide habitat of less value than adjacent undeveloped areas.

Alternative 2a

Direct and Indirect Effects

Suitable habitat for arroyo toad occurs in various streambeds and drainages throughout the entire Project area. Of the estimated 41.84 acres of riparian habitat within the analysis area for Alternative 2a, the amount that would be affected by transmission line construction, operation, and maintenance is 5.70 acres of temporary disturbance and 1.83 acres of permanent disturbance. Temporary disturbance represents 13.62% of the total riparian habitat available within the analysis area for Alternative 2a and 0.02% of the total riparian habitat available on the ANF, while permanent disturbance represents 4.37% of the total riparian habitat available within the analysis area for Alternative 2a and 0.01% of the total riparian habitat available on the ANF.

Post-Project treatments would require efforts to ensure the establishment of native vegetation in areas of ground disturbance. If these efforts are not fully successful and there is an increased amount of invasive species in riparian habitat, habitat values for the arroyo toad would decrease. Impacts to vegetation in the vicinity of riparian areas may affect the quality of foraging habitat for arroyo toad. While arroyo toads will forage around and under chaparral, mulefat, or willow thickets as prey availability allows, they are most often found around the drip lines of coast live oak trees, where prey is usually abundant (USFWS 1999). Additionally, impacts to upland habitat may directly or indirectly affect arroyo toad overwintering habitat, although the ecology of their overwintering sites is not well known other than that burrowing typically occurs in stream terraces or in the area between the channel and terraces (USFWS 1999, USFWS 2009).

Based on this, it is anticipated that construction on Alternative 2a would result in temporary loss of 5.70 acres and permanent loss of 1.83 acres of riparian habitat that may be suitable for arroyo toad. Habitat values may be decreased if Project activities increase the distribution and abundance of invasive plants. If the Project impacts the hydrology of intermittent streams in areas such as in Dry Canyon or Baird Canyon or even perennial areas such as Drinkwater Flat, where Project vehicles may pass directly through streambeds on access roads or to access tower locations, it could have a more long-term impact on riparian vegetation and availability of surface water. This would also be true for RCAs that may be affected by construction on Alternative 2a. It is anticipated that a total of 78 RCAs would be affected on Alternative 2a. Within the ANF where the terrain is steep and access is limited, the Forest Service would require that the new double-circuit 230 kV structures be constructed by the use of helicopter.

During protocol arroyo toad surveys for the BRRTP, two survey sites with arroyo toad habitat suitability were visited on Alternative 2a within the Drinkwater Flat area over the course of the 2008 and 2009 survey seasons; one survey site was visited in South Portal Canyon during the 2010 survey season (POWER 2010a). Several other sites were visited in San Francisquito Canyon, which were not within the ROW, but were within a one-mile radius of the ROW that was surveyed due to potential for indirect effects. No arroyo toads were identified at any of these sites, although other anurans including Pacific treefrog, California treefrog, and western toad were often present in various life stages. Any incidental effects from construction, such as vehicle fluid leaks, loss of breeding or foraging habitat, spread of non-native vegetation seeds, or particularly soil compaction, would negatively affect riparian and arroyo toad habitat quality.

Cumulative Effects

In April 2009, LADWP conducted unauthorized road grading along City Highline Road, a road that would provide partial access to Alternative 2a. The grading along this road passed through 26 mapped RCAs. While arroyo toad protocol surveys were conducted in this area in 2008 and 2009 for the BRRTP, only two survey sites were within the graded area (POWER 2010a). Neither of these sites was located immediately adjacent to the road and they are not expected to have been affected by the grading. As such, this grading action, despite affecting individual RCAs, is not expected to have affected any RCAs that would be conducive to supporting arroyo toad, and therefore is unlikely to have affected arroyo toad or its habitat and would have no cumulative effects with any corresponding effects of the BRRTP.

SCE's Antelope-Pardee 500 kV Transmission Project identified a high potential for arroyo toad to occur within its project area. The CNDDDB lists an arroyo toad record approximately 1.5 miles south of the Antelope-Pardee ROW at San Francisquito Creek (CDFG 2011); in addition, there is designated critical habitat for this species located in the Santa Clara River. Possible project impacts considered by Antelope-Pardee included impacts to breeding habitat due to construction work adjacent to San Francisquito Creek or due to crews carrying transmission lines or equipment across the creek on foot; crushing from equipment; disruption of breeding activity; take of toads, egg strands, or larvae; indirect mortality by causing toads to vacate the area; increased predation; habitat alteration and/or degradation as a result of changes in water flows or leaks from vehicles; or loss of upland habitat (Aspen 2006). BRRTP is not expected to have as many of the same impacts as the Antelope-Pardee Project due to the unlikely possibility of arroyo toads occurring within the Alternative 2a area. However, any impact to arroyo toad individuals or habitat that may occur during BRRTP's construction would cumulatively affect the regional population of arroyo toads.

In October 2009, LADWP conducted a repair of the south portal of the Elizabeth Tunnel, part of the Combined Section of the Los Angeles Aqueduct, located in South Portal Canyon. Alternative 2a would be located far up the slopes along the western side of this area. This tunnel has a low continuous water leak that flows after a short distance into the intermittent streambed running through South Portal Canyon. The tunnel entrance is normally covered with sediment to reduce detection by the public, but was discovered to be exposed and the entrance partially damaged. The sediment that normally covers the entrance was determined to be immediately downstream, raising the ground level several feet. Construction involved excavating the sediment downstream and using it to cover the tunnel entrance once more and lowering the area downstream to its previous elevation. The tunnel still leaks water, which flows into the intermittent streambed. The surrounding intermittent streambed and this specific tunnel repair site were determined to be the most suitable arroyo toad habitat throughout the South Portal Canyon area and were surveyed numerous times during the 2010 arroyo toad breeding season. While no arroyo toads were identified in this area during any surveys, Pacific treefrogs and western toads were observed in amplexus throughout multiple surveys, and the outflow pool that formed immediately downstream of the Elizabeth Tunnel entrance was observed during every survey to contain egg masses, egg strands, tadpoles, and/or amplexing adults. While arroyo toad habitat in this area was undoubtedly affected by the sediment and construction action, because the area has since been providing suitable breeding habitat for other anurans, the net change in habitat quality or functionality is likely very little. Any debris that might fall down the slope during construction of Alternative 2a into this area would possibly affect breeding or foraging habitat, creating a cumulative effect with the actions described above, although no arroyo toads were detected here during surveys and they are not known to occur in this area.

The ANF is proposing to extend its efforts at invasive plant removal with its Santa Clara River Watershed Invasive Plant Treatment Project. While the ANF conducted removal of giant reed between 1995 and 2005, the ANF has proposed to extend the scope of the removal activities to include other non-native species such as tamarisk (*Tamarix* sp.), tree-of-heaven (*Ailanthus altissima*), yellow star thistle (*Centaurea solstitialis*), and tree tobacco (*Nicotiana glauca*), among others (USFS 2010a, USFS 2010b).

Removal methods being considered include biological control, manual or mechanical removal, burning, or herbicide use. Specific removal methods will be determined for each site, but it is likely that removing non-native plant species, particularly within streambed areas that have extensive invasive species composition, will benefit arroyo toads and their habitat. The Forest Service will enforce all necessary mitigation measures for sensitive species as outlined in the project's Purpose and Need and Proposed Action Statement (USFS 2010b).

Cumulative Effects Conclusion

It is anticipated that construction of Alternative 2a, in combination with these past, present, and reasonably foreseeable future actions, would result in the temporary loss of 5.70 acres and the permanent loss of 1.83 acres of arroyo toad habitat in the analysis area. The temporary impact amount is equivalent to 0.02% of the total riparian habitat available on the ANF, while the permanent impact amount is equivalent to 0.01% of the total riparian habitat available on the ANF. While temporary effects from Alternative 2a would not render the affected areas totally unsuitable for arroyo toads, affected areas would be expected to provide habitat of less value than adjacent undeveloped areas.

Alternative 3

Direct and Indirect Effects

Suitable habitat for arroyo toad occurs in various streambeds and drainages throughout the entire Project area. Of the estimated 6.47 acres of riparian habitat within on the analysis area for Alternative 3, the amount that would be affected by transmission line construction, operation, and maintenance is 0.69 acre of temporary disturbance and 0.34 acre of permanent disturbance. Temporary disturbance represents 10.66% of the total riparian habitat available within the analysis area for Alternative 3 and $2.34 \times 10^{-3}\%$ of the total riparian habitat available on the ANF, while permanent disturbance represents 5.26% of the total riparian habitat available within the analysis area for Alternative 3 and $1.15 \times 10^{-3}\%$ of the total riparian habitat available on the ANF.

Post-Project treatments would require efforts to ensure the establishment of native vegetation in areas of ground disturbance. If these efforts are not fully successful and there is an increased amount of invasive species in riparian habitat, habitat values for the arroyo toad would decrease. Impacts to vegetation in the vicinity of riparian areas may affect the quality of foraging habitat for arroyo toad. While arroyo toads will forage around and under chaparral, mulefat, or willow thickets as prey availability allows, they are most often found around the drip lines of coast live oak trees, where prey is usually abundant (USFWS 1999). Additionally, impacts to upland habitat may directly or indirectly affect arroyo toad overwintering habitat, although the ecology of their overwintering sites is not well known other than that burrowing typically occurs in stream terraces or in the area between the channel and terraces (USFWS 1999, USFWS 2009).

Based on this, it is anticipated that construction on Alternative 3 would result in temporary loss of 0.69 acre and permanent loss of 0.34 acre of riparian habitat that may be suitable for arroyo toad. Habitat values may be decreased if Project activities increase the distribution and abundance of invasive plants. If the Project impacts the hydrology of intermittent streams in areas such as in Vasquez Canyon, where Project vehicles may pass directly through the streambed on Lost Creek Road to access tower locations, it could have a more long-term impact on riparian vegetation and availability of surface water. This would also be true for RCAs that may be affected by construction on Alternative 3. It is anticipated that five RCAs would be affected by construction on Alternative 3. Not all of these are immediately within the proposed Project ROW, but are present on the ANF in areas where potential access roads, such as Lost Creek Road, would pass through the area. No arroyo toad survey sites were located along Alternative 3.

Cumulative Effects

SCE's Antelope-Pardee 500 kV Transmission Project identified a high potential for arroyo toad to occur within its project area. The CNDDB lists an arroyo toad record approximately 1.5 miles south of the Antelope-Pardee ROW at San Francisquito Creek (CDFG 2011); in addition, there is designated critical habitat for this species located in the Santa Clara River. Possible project impacts considered by Antelope-Pardee included impacts to breeding habitat due to construction work adjacent to San Francisquito Creek or due to crews carrying transmission lines or equipment across the creek on foot; crushing from equipment; disruption of breeding activity; take of toads, egg strands, or larvae; indirect mortality by causing toads to vacate the area; increased predation; habitat alteration and/or degradation as a result of changes in water flows or leaks from vehicles; or loss of upland habitat (Aspen 2006). BR RTP is not expected to have as many of the same impacts as the Antelope-Pardee Project due to the unlikely possibility of arroyo toads occurring within the Alternative 3 area. However, any impact to arroyo toad individuals or habitat that may occur during BR RTP's construction would cumulatively affect the regional population of arroyo toads.

The ANF is proposing to extend its efforts at invasive plant removal with its Santa Clara River Watershed Invasive Plant Treatment Project. While the ANF conducted removal of giant reed between 1995 and 2005, the ANF has proposed to extend the scope of the removal activities to include other non-native species such as tamarisk (*Tamarix* sp.), tree-of-heaven (*Ailanthus altissima*), yellow star thistle (*Centaurea solstitialis*), and tree tobacco (*Nicotiana glauca*), among others (USFS 2010a, USFS 2010b). Removal methods being considered include biological control, manual or mechanical removal, burning, or herbicide use. Specific removal methods will be determined for each site, but it is likely that removing non-native plant species, particularly within streambed areas that have extensive invasive species composition, will benefit arroyo toads and their habitat. The Forest Service will enforce all necessary mitigation measures for sensitive species as outlined in the project's Purpose and Need and Proposed Action Statement (USFS 2010b).

Cumulative Effects Conclusion

It is anticipated that construction of Alternative 3, in combination with these past, present, and reasonably foreseeable future actions, would result in the temporary loss of 0.69 acre and the permanent loss of 0.34 acre of arroyo toad habitat in the analysis area. The temporary impact amount is equivalent to $2.34 \times 10^{-3}\%$ of the total riparian habitat available on the ANF, while the permanent impact amount is equivalent to $1.15 \times 10^{-3}\%$ of the total riparian habitat available on the ANF. While temporary effects from Alternative 3 would not render the affected areas totally unsuitable for arroyo toads, affected areas would be expected to provide habitat of less value than adjacent undeveloped areas.

Reconductoring

Direct and Indirect Effects

Suitable habitat for arroyo toad occurs in various streambeds and drainages throughout the entire Project area. Of the estimated 87.31 acres of riparian habitat within the analysis area for the reconductoring, the amount that would be affected by transmission line construction, operation, and maintenance is 9.60 acres of temporary disturbance and 4.53 acres of permanent disturbance. Temporary disturbance represents 11.00% of the total riparian habitat within the reconductoring area and 0.03% of the total riparian habitat available on the ANF, while permanent disturbance represents 5.19% of the total riparian habitat within the analysis area for the reconductoring, and 0.02% of the total riparian habitat available on the ANF. The reconductoring would roughly parallel and be in close proximity to Alternative 2 throughout the ANF. Therefore, many of the areas that it would affect are similar to the Alternative 2 affected areas. However, because exact disturbance would be dependent on actual road and individual tower conditions at the time of construction, the disturbance numbers given above and the effects described below are based on the assumption that the reconductoring operation would cause a similar amount of disturbance on average as

the construction of the new transmission line. Actual disturbance may be lower than what is projected here, but cannot be accurately estimated at this time.

Post-Project treatments would require efforts to ensure the establishment of native vegetation in areas of ground disturbance. If these efforts are not fully successful and there is an increased amount of invasive species in riparian habitat, habitat values for the arroyo toad would decrease. Impacts to vegetation in the vicinity of riparian areas may affect the quality of foraging habitat for arroyo toad. While arroyo toads will forage around and under chaparral, mulefat, or willow thickets as prey availability allows, they are most often found around the drip lines of coast live oak trees, where prey is usually abundant (USFWS 1999). Additionally, impacts to upland habitat may directly or indirectly affect arroyo toad overwintering habitat, although the ecology of their overwintering sites is not well known other than that burrowing typically occurs in stream terraces or in the area between the channel and terraces (USFWS 1999, USFWS 2009).

Based on this, it is anticipated that the reconductoring would result in the temporary loss of 9.60 acres and permanent loss of 4.53 acres of riparian habitat that may be suitable for arroyo toad. Habitat values may be decreased if the Project activities increase the distribution and abundance of invasive plants. If the Project impacts the hydrology of intermittent streams in areas such as in Dry Canyon or Baird Canyon or even perennial areas such as Drinkwater Flat, where Project vehicles may pass directly through streambeds on access roads or to access tower locations, it could have a more long-term impact on riparian vegetation and availability of surface water. This would also be true for RCAs that may be affected by construction within the reconductoring area. It is anticipated that approximately 50 RCAs would be affected by the reconductoring. Most of the impacted RCAs would be the same as those impacted by Alternative 2, but in the short isolated areas where the two ROWs diverge, there may be a small difference in the number of RCAs affected by construction. RCAs would mainly be affected due to insufficient road width. Some of these were already affected in April 2009 due to unauthorized grading by LADWP, which will be addressed further in the Cumulative Effects section.

During protocol arroyo toad surveys for the BRRTP, two survey sites with arroyo toad habitat suitability were visited on Alternative 2 within the Drinkwater Flat area over the course of the 2008 and 2009 survey seasons (POWER 2010a). Several other sites were visited in San Francisquito Canyon, which were not within the ROW, but were within a one-mile radius of the ROW that was surveyed due to potential for indirect effects. No arroyo toads were identified at any of these sites, although other anurans including Pacific treefrog, California treefrog, and western toad were often present in various life stages. Any incidental effects from construction, such as vehicle fluid leaks, loss of breeding or foraging habitat, spread of non-native vegetation seeds, or particularly soil compaction, would negatively affect riparian and arroyo toad habitat quality.

Cumulative Effects

In April 2009, LADWP conducted unauthorized road grading along City Highline Road, a road that would provide partial access to the reconductoring area. The grading along this road passed through 26 mapped RCAs. While arroyo toad protocol surveys were conducted in this area in 2008 and 2009 for the BRRTP, only two survey sites were within the graded area (POWER 2010a). Neither of these sites was located immediately adjacent to the road and they are not expected to have been affected by the grading. As such, this grading action, despite affecting individual RCAs, is not expected to have affected any RCAs that would be conducive to supporting arroyo toad, and therefore is unlikely to have affected arroyo toad or its habitat and would have no cumulative effects with any corresponding effects of the BRRTP.

SCE's Antelope-Pardee 500 kV Transmission Project identified a high potential for arroyo toad to occur within its project area. The CNDDDB lists an arroyo toad record approximately 1.5 miles south of the

Antelope-Pardee ROW at San Francisquito Creek (CDFG 2011); in addition, there is designated critical habitat for this species located in the Santa Clara River. Possible project impacts considered by Antelope-Pardee included impacts to breeding habitat due to construction work adjacent to San Francisquito Creek or due to crews carrying transmission lines or equipment across the creek on foot; crushing from equipment; disruption of breeding activity; take of toads, egg strands, or larvae; indirect mortality by causing toads to vacate the area; increased predation; habitat alteration and/or degradation as a result of changes in water flows or leaks from vehicles; or loss of upland habitat (Aspen 2006). BR RTP is not expected to have as many of the same impacts as the Antelope-Pardee Project due to the unlikely possibility of arroyo toads occurring within the reconductoring area. However, any impact to arroyo toad individuals or habitat that may occur during BR RTP's construction would cumulatively affect the regional population of arroyo toads.

The ANF is proposing to extend its efforts at invasive plant removal with its Santa Clara River Watershed Invasive Plant Treatment Project. While the ANF conducted removal of giant reed between 1995 and 2005, the ANF has proposed to extend the scope of the removal activities to include other non-native species such as tamarisk (*Tamarix* sp.), tree-of-heaven (*Ailanthus altissima*), yellow star thistle (*Centaurea solstitialis*), and tree tobacco (*Nicotiana glauca*), among others (USFS 2010a, USFS 2010b). Removal methods being considered include biological control, manual or mechanical removal, burning, or herbicide use. Specific removal methods will be determined for each site, but it is likely that removing non-native plant species, particularly within streambed areas that have extensive invasive species composition, will benefit arroyo toads and their habitat. The Forest Service will enforce all necessary mitigation measures for sensitive species as outlined in the project's Purpose and Need and Proposed Action Statement (USFS 2010b).

Cumulative Effects Conclusion

It is anticipated that reconductoring of the existing transmission line, in combination with these past, present, and reasonably foreseeable future actions, would result in the temporary loss of 9.60 acres and the permanent loss of 4.53 acres of arroyo toad habitat in the analysis area. The temporary impact amount is equivalent to 0.03% of the total riparian habitat available on the ANF, while the permanent impact amount is equivalent to 0.02% of the total riparian habitat available on the ANF. While temporary effects from the reconductoring would not render the affected areas totally unsuitable for arroyo toads, affected areas would be expected to provide habitat of less value than adjacent undeveloped areas.

New 230 kV Circuit

Direct and Indirect Effects

Suitable habitat for arroyo toad occurs in various streambeds and drainages throughout the entire Project area. Of the estimated 15.38 acres of riparian habitat within the analysis area for the new circuit, the amount that would be affected by transmission line construction, operation, and maintenance is 1.65 acres of temporary disturbance and 0.57 acre of permanent disturbance. Temporary disturbance represents 10.73% of the total riparian habitat available in the analysis area for the new circuit and 0.01% of the total riparian habitat available on the ANF, while permanent disturbance represents 3.71% of the total riparian habitat available within the analysis area for the new circuit and $1.93 \times 10^{-3}\%$ of the total riparian habitat available on the ANF. The forested portion and much of the non-forested portion of the new circuit would parallel Alternative 1. Therefore, many of the areas that it would affect within the ANF would be similar to the Alternative 1 affected areas. However, because exact disturbance would be dependent on actual road and individual tower conditions at the time of construction, the disturbance numbers given above and the effects described below are based on the assumption that installation of the new circuit would cause a similar amount of disturbance on average as the construction of the new Alternative 1 transmission line. Actual disturbance may be lower than what is projected here, but cannot be accurately estimated at this time.

Post-Project treatments would require efforts to ensure the establishment of native vegetation in areas of ground disturbance. If these efforts are not fully successful and there is an increased amount of invasive species in riparian habitat, habitat values for the arroyo toad would decrease. Impacts to vegetation in the vicinity of riparian areas may affect the quality of foraging habitat for arroyo toad. While arroyo toads will forage around and under chaparral, mulefat, or willow thickets as prey availability allows, they are most often found around the drip lines of coast live oak trees, where prey is usually abundant (USFWS 1999). Additionally, impacts to upland habitat may directly or indirectly affect arroyo toad overwintering habitat, although the ecology of their overwintering sites is not well known other than that burrowing typically occurs in stream terraces or in the area between the channel and terraces (USFWS 1999, USFWS 2009).

Based on this, it is anticipated that installation of the new circuit would result in temporary loss of 1.65 acres and permanent loss of 0.57 acre of riparian habitat that may be suitable for arroyo toad. Habitat values may be decreased if Project activities increase the distribution and abundance of invasive plants. If the Project impacts the hydrology of intermittent streams in areas such as in Charlie Canyon, where Project vehicles may pass directly through the streambed on access roads or to access tower locations, it could have a more long-term impact on riparian vegetation and availability of surface water. This is also true for RCAs that may be affected by construction in the new circuit area. It is expected that one RCA on the ANF may be affected by construction. There are numerous other streambed crossings outside of the forest, such as in Charlie Canyon, but these are not within the ANF. There were no arroyo toad protocol survey sites located within the ANF along the new circuit. Two survey sites were visited in San Francisquito Creek in 2008 and 2009 in the area where the existing transmission line crosses overhead (POWER 2010a). These two sites were not located on NFS lands, but were surveyed for presence due to indirect impacts that could occur from the overhead presence of the transmission line. No arroyo toads were identified at these two sites.

Cumulative Effects

SCE's Antelope-Pardee 500 kV Transmission Project identified a high potential for arroyo toad to occur within its project area. The CNDDDB lists an arroyo toad record approximately 1.5 miles south of the Antelope-Pardee ROW at San Francisquito Creek (CDFG 2011); in addition, there is designated critical habitat for this species located in the Santa Clara River. Possible project impacts considered by Antelope-Pardee included impacts to breeding habitat due to construction work adjacent to San Francisquito Creek or due to crews carrying transmission lines or equipment across the creek on foot; crushing from equipment; disruption of breeding activity; take of toads, egg strands, or larvae; indirect mortality by causing toads to vacate the area; increased predation; habitat alteration and/or degradation as a result of changes in water flows or leaks from vehicles; or loss of upland habitat (Aspen 2006). BR RTP is not expected to have as many of the same impacts as the Antelope-Pardee Project due to the unlikely possibility of arroyo toads occurring within the BR RTP area, and the population in Castaic Creek is different from the population that may be in San Francisquito Creek near the Antelope-Pardee Project ROW. However, any impact to arroyo toad individuals or habitat that may occur during BR RTP's construction would cumulatively affect the regional population of arroyo toads.

The ANF is proposing to extend its efforts at invasive plant removal with its Santa Clara River Watershed Invasive Plant Treatment Project. While the ANF conducted removal of giant reed between 1995 and 2005, the ANF has proposed to extend the scope of the removal activities to include other non-native species such as tamarisk (*Tamarix* sp.), tree-of-heaven (*Ailanthus altissima*), yellow star thistle (*Centaurea solstitialis*), and tree tobacco (*Nicotiana glauca*), among others (USFS 2010a, USFS 2010b). Removal methods being considered include biological control, manual or mechanical removal, burning, or herbicide use. Specific removal methods will be determined for each site, but it is likely that removing non-native plant species, particularly within streambed areas that have extensive invasive species composition, will benefit arroyo toads and their habitat. The Forest Service will enforce all necessary

mitigation measures for sensitive species as outlined in the project's Purpose and Need and Proposed Action Statement (USFS 2010b).

Pacific Pipeline is proposing to relocate several miles of its crude oil lines to more stable ground following heavy winter storms in 2005 (USFS 2009 – 2010). This may affect arroyo toad habitat depending on specific relocation areas, but is unlikely to affect individual toads due to the lack of known occurrences in the general project area.

Cumulative Effects Conclusion

It is anticipated that adding a conductor to the existing transmission line, in combination with these past, present, and reasonably foreseeable future actions, would result in the temporary loss of 1.65 acres and the permanent loss of 0.57 acre of arroyo toad habitat in the analysis area. The temporary impact amount is equivalent to 0.01% of the total riparian habitat available on the ANF, while the permanent impact amount is equivalent to $1.93 \times 10^{-3}\%$ of the total riparian habitat available on the ANF. While temporary effects from installation of the new circuit would not render the affected areas totally unsuitable for arroyo toads, affected areas would be expected to provide habitat of less value than adjacent undeveloped areas.

7.3.4 Summary of Habitat and Population Status and Trend at the Forest Scale

For monitoring, the Forest Service FEIS (USFS 2005b, Volume 2, page 77) identifies population abundance and/or habitat conditions in selected locations as acceptable methodologies that would assist in measuring population trends. The sections below summarize the habitat and population status and trend data for the arroyo toad. This information is drawn from the information on habitat and population trends in the ANF MIS Report (USFS 2008), which is hereby incorporated by reference.

- *Habitat Status and Trend*
Arroyo toad habitat was modeled on the ANF in 2006, resulting in an estimation of 29,464 acres of arroyo toad habitat encompassing approximately 4% of the total ANF. However, no data on the habitat status or trends is available at this time.
- *Population Status and Trend at the Forest Scale*
Arroyo toad populations are known within the ANF in Castaic Creek, Big Tujunga Creek and the lower reach of Alder Creek, and Little Rock Creek. Although these sites are surveyed annually, there are no estimates available for total ANF populations of arroyo toad. Survey results are described in greater detail in the ANF MIS Report (USFS 2008).

7.3.5 Relationship of Project-Level Impacts to Forest Scale Habitat and Population Trends for the Species

Areas impacted by Project activities would not initially provide suitable habitat for arroyo toads. However, with successful implementation of restoration efforts, the Project area would be expected to provide suitable arroyo toad habitat in the future (more than five years). The Project-level habitat impacts would not alter or contribute to any existing forest-wide population trends for the arroyo toad.

7.4 SONG SPARROW (*MELOSPIZA MELODIA*)

7.4.1 Habitat/Species Relationship

The song sparrow is an MIS for riparian areas because it is believed to be indicative of the health of riparian communities, particularly where birds are concerned, due its high percentage of nests—approximately 90%—within riparian vegetation (Arcese et al. 2002, USFS 2008). They are associated with aquatic and riparian habitats and are affected by ground disturbance including trampling and soil

compaction; spread of invasive nonnative species; mortality from collision; and altered stream flow regimes. According to the Forest Service FEIS (USFS 2005b, Volume 2, page 77), the objective for song sparrow on the ANF is to have stable or increasing populations and healthy riparian habitat.

The song sparrow's distribution is highly influenced by the availability of aboveground water, and it is less abundant in areas where riparian vegetation is less common, instead typically occurring in areas with standing or running water (Arcese et al. 2002, Humple and Geupel 2004). Nests are typically built on the ground or over water, but are rarely found within trees (Arcese et al. 2002, USFS 2008). The song sparrow is a permanent resident of coastal scrub and riparian brush over most of the forest (Aspen 2009). Song sparrows are usually located in riparian areas with dense understories, and certain subspecies in California may also inhabit freshwater marshes (Humble and Geupel 2004, USFS 2008). Marshall (1948) concluded that song sparrows' main requirements are a source of water (which in the case of coastal or dune scrub may mean constant moisture from fog, dew, or seepage), moderately dense vegetation, plenty of light, and exposed ground or leaf litter for foraging. The importance of small red alder trees for song sparrows (significant positive correlation between nest success and number of trees within 11.3 m of the nest) within the Golden Gate National Recreation Area suggests the importance of early successional, non-willow riparian habitat for this species (Gardali et al. 1998). In San Diego County, they have been documented nesting in gardens, nurseries, and weedy areas, and may occupy territories as small as 0.05 acre (Unitt 2004). Breeding sites have been recorded typically from 200 feet below sea level to 5,000 feet above sea level, although in Southern California breeding has been documented at elevations up to 8,200 feet (USFS 2008).

Because the song sparrow is so strongly identified with and dependent on riparian habitat, human-related impacts to riparian areas—such as development, recreation, and pollution—are expected to have detrimental effects on this species and its abundance. Additionally, study has indicated that where grazing occurs near song sparrow nesting sites, song sparrow nests are much less likely to be successful than in areas that are ungrazed (Chase 2002). Chase's study in grazed and ungrazed areas (2002) also found that song sparrow nests were more likely to be constructed in shrubby vegetation patches than in herbaceous patches, although the prevalence of California blackberry (*Rubus ursinus*), which in this study largely determined how shrubby an area was, was deemed to not be indicative of nest success. While widespread parasitism was not observed during this study, it is believed that grazing increases parasitism rates on song sparrows by brown-headed cowbirds (*Molothrus ater*) by changing vegetative composition and reducing cover that would otherwise hide song sparrow nests (Chase 2002, USFS 2008).

Sauer et al. (2008) summarize Breeding Bird Survey data, which show a declining trend for the song sparrow in California. An average decrease of 0.3% per year was noted for the period of 1966-2007, with a decline becoming more evident in the 1980-2007 sampling period (-0.9%). Though these results were not statistically significant, they are consistent with what appears to be a nationwide decline in the abundance of this species. Song sparrows are present on all four Southern California National Forests and were recorded at 197 out of 206 stations during the 1988-1997 and 2003 riparian bird count surveys (USFS 2008). Because song sparrows were so abundant during surveys, negative trends in abundance were able to be determined over time, giving results consistent with those determined by the Breeding Bird Surveys (USFS 2008).

As stated above, threats to riparian habitat inherently threaten song sparrows and their use or continued use of an area. Predation is another factor that has affected the success of song sparrow nests and persistence, with brown-headed cowbirds in particular being implicated in nest failure due to their habit of brood parasitism by which they place their eggs in the nest of another bird (USFS 2008). Other predators that may affect song sparrows can include gopher snakes (*Pituophis catenifer*), western terrestrial garter snakes (*Thamnophis elegans*), and western scrub-jays (*Aphelocoma californica*), along with various rodents or domesticated animals such as cats and dogs (Chase 2002, USFS 2008).

San Francisquito Canyon, which parallels the proposed Alternative 2 corridor at a distance of about two miles, contains suitable song sparrow habitat. A song sparrow was identified during 2009 RCA surveys along Alternative 2 north of Drinkwater Flat (POWER 2010e). Additional habitat exists around Grass Mountain near the community of Green Valley, in Dry Canyon, and along the new circuit, particularly near the West Fork of Liebre Creek.

A habitat assessment for riparian birds was conducted in 2008 (POWER 2009) and Bird Use Counts were conducted in 2010 (POWER 2011). No protocol surveys for song sparrows were conducted specifically for the BRRTTP area. Breeding Bird Survey summary results for the entire State of California do not show a statistically significant change from 1966 to 2007 (Sauer et al. 2008). General song sparrow numbers for California from the Audubon Society's Christmas Bird Counts appear to be relatively stable over the last 25 years, generally fluctuating annually in the range between 15,000 and 18,000, with occasional numbers near 13,000 or exceeding 19,000 song sparrows detected (Audubon 2010a). Song sparrow counts from 1972 to 1997 for Grass Mountain, which Alternative 2 would run along the base of in San Francisquito Canyon, show large fluctuations in the numbers of song sparrows detected in this area, varying from only one in many years to a high of 134 in 1996 (Audubon 2010b). The counts for 1995 – 1997 show, respectively, 10, 134, and 5 song sparrows recorded; no data past 1997 is available for Grass Mountain.

7.4.2 Project-level Effects Analysis Based on Habitat

Key Habitat Factor(s) for the Analysis: Availability of shrub type riparian vegetation and early seral non-willow riparian vegetation in close proximity to surface water during the breeding season is a limiting factor for song sparrow. The Forest Service FEIS (USFS 2005b, Volume 2, page 77) considers aquatic and riparian habitat as suitable for the song sparrow. The Forest Service uses a different vegetation community classification system (CalVeg) than BRRTTP (Holland [1986]); BRRTTP analysis utilized Holland (1986) vegetation communities to produce the estimated disturbance impacts listed in Table 11. The table below illustrates the expected correlation between the Holland (1986) vegetation communities and the CalVeg vegetation communities that the Forest Service uses. The CalVeg communities listed below are those that are cited by the Forest Service as being suitable for song sparrow in the ANF MIS Report (USFS 2008). Correlations were determined based on mutual dominant or associated species and features of respective communities. For most communities below, a clear link can be seen between a Holland (1986) community and a CalVeg community. For instance, the Holland (1986) "Southern Willow Scrub" is closely correlated with the CalVeg "Willow Alliance," as well as with the "Riparian Mixed Hardwood Alliance," which contains numerous co-dominant species. However, species composition elements of Southern Willow Scrub are also present within other CalVeg communities such as "California Sycamore Alliance" and "White Alder Alliance." "Southern Coast Live Oak Riparian Forest," however, has no direct correlation with the CalVeg communities listed by the Forest Service as being suitable habitat for song sparrow (USFS 2008). Alternatively, coast live oaks are associated species of both the "California Sycamore Alliance" and "Willow Alliance" communities, so these were listed in the table below as containing elements of this community while not being exact substitutions. The CalVeg communities "California Bay Alliance" and "Black Cottonwood Alliance" were not included because their dominant species were not detected in the BRRTTP vicinity during 2008 – 2010 botanical surveys.

TABLE 11. BRRTP HOLLAND (1986) COMMUNITIES AND CORRELATING FOREST SERVICE CALVEG COMMUNITIES – SONG SPARROW

BRRTP SUITABLE SONG SPARROW RIPARIAN VEGETATION COMMUNITIES	CORRELATING CALVEG SONG SPARROW VEGETATION COMMUNITIES
Southern Coast Live Oak Riparian Forest	<i>California Sycamore Alliance</i> <i>Willow Alliance</i>
Southern Cottonwood Willow Riparian Forest	<i>California Sycamore Alliance</i> Riparian Mixed Hardwood Alliance <i>White Alder Alliance</i> <i>Willow Alliance</i>
Southern Riparian Scrub	<i>California Sycamore Alliance</i> Riparian Mixed Hardwood Alliance <i>White Alder Alliance</i> <i>Willow Alliance</i>
Southern Sycamore Alder Riparian Woodland	<i>California Sycamore Alliance</i> Riparian Mixed Hardwood Alliance <i>White Alder Alliance</i> <i>Willow Alliance</i>
Southern Willow Scrub	<i>California Sycamore Alliance</i> Riparian Mixed Hardwood Alliance <i>White Alder Alliance</i> <i>Willow Alliance</i>

Note: CalVeg communities in italics are those that may contain strong elements of the Holland (1986) communities, but for which the dominant species in the Holland community is an associate, not a dominant, species of the CalVeg community.

Analysis Area for Project-level Effects Analysis: The analysis area for direct, indirect, and cumulative effects of the BRRTP on song sparrows varies according to Project components, which overlap and encompass different vegetation areas. Because the Forest Service FEIS (USFS 2005b, Volume 2, page 77) considers aquatic and riparian habitat to be suitable for song sparrows, all riparian habitat types within BRRTP are taken into account for disturbance estimates. Since the Forest Service CalVeg and the BRRTP Holland (1986) community classification systems vary, the BRRTP vegetation communities were verified for similarity to appropriate CalVeg communities in Table 11 above. Thus, while communities may not be exactly the same, the substitution between classification systems is close enough that disturbance to the BRRTP communities listed in Table 11 above should correlate closely to disturbance to song sparrow habitat as defined by the Forest Service CalVeg system. Using these correlations, the total acreage of suitable song sparrow habitat within each Project alternative or component on the ANF is presented in Table 12. These calculations are based on the 500-foot wide corridor and include projected habitat disturbance from construction staging areas and access roads.

TABLE 12. TOTAL SONG SPARROW HABITAT ACREAGE OF EACH BRRTP COMPONENT ON ANF AND PERCENTAGE OF TOTAL ANF

	ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 2A	ALTERNATIVE 3	RECONDUCTORING	NEW CIRCUIT
Total Acres of Suitable Song Sparrow Habitat within the Analysis Area	26.92	46.84	41.84	6.47	87.31	15.38
Percentage of Total Song Sparrow Habitat on the ANF (4,549 acres)	0.59%	1.03%	0.92%	0.14%	1.92%	0.34%

	ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 2A	ALTERNATIVE 3	RECONDUCTORING	NEW CIRCUIT
Total Acres of Suitable Song Sparrow Habitat Impacted within the Analysis Area*	3.71	7.76	7.53	1.03	14.13	2.22
Percentage Impacted of Total Riparian Habitat on the ANF (4,549 acres)	0.08%	0.17%	0.17%	0.02%	0.31%	0.05%

*This acreage is calculated based on the maximum temporary and permanent acreages and represents a "worst-case scenario" of disturbance.

Current Condition of the Key Habitat Factor(s) in the Analysis Area: The percentage of the total song sparrow habitat for each component relative to the total ANF is above in Table 12.

7.4.3 Direct and Indirect Effects to Song Sparrow

If construction activities are concurrent with nesting season, then impacts to song sparrow breeding success is possible. However, construction is expected to occur outside of the general breeding season, and implementation of this Project is not expected to have significant direct effects upon song sparrows since permanent alteration of riparian habitat is expected to be minimal. GPs for the Project include building transmission towers to avoid riparian areas, avoidance of blading new access roads when feasible, the implementation of a Restoration and Revegetation Plan, and mitigation requirements to be described in the finalized Streambed Alteration Agreement with CDFG.

Indirect effects to song sparrows would probably be positive as vegetation recovers. Periodic rejuvenation of streamside vegetation after flooding events is considered an improvement for many wildlife species and is a natural factor in long-term riparian health. Habitat degradation as a result of spread of non-native species, dust, or vehicular fluid leaks could make habitat patches less attractive to song sparrows.

Alternative 1

Direct and Indirect Effects

Song sparrows are associated with brushy riparian vegetation or the early seral stage of riparian trees. Of the estimated 26.92 acres of suitable song sparrow habitat within the analysis area for Alternative 1, the amount that would be affected by transmission line construction, operation, and maintenance is 2.79 acres of temporary disturbance and 0.92 acre of permanent disturbance. Temporary disturbance represents 10.36% of the total suitable song sparrow habitat within the analysis area for Alternative 1 and 0.06% of the total suitable song sparrow habitat available on the ANF. Permanent disturbance represents 3.42% of the total suitable song sparrow habitat within the analysis area for Alternative 1 and 0.02% of the total suitable song sparrow habitat available within the ANF.

Existing vegetation would be removed on the 2.79 acres temporarily impacted by Project activities. Until native vegetation is recovered, this area would not provide suitable habitat for the song sparrow. Once native vegetation such as willow and mulefat is established, the area would provide suitable habitat for the song sparrow. However, this vegetation would require several years to reach the conditions necessary for nesting song sparrows. Post-Project treatments would require efforts to ensure the establishment of native vegetation. If these efforts are not fully successful and there is an increased amount of invasive species, habitat values for the song sparrow would decrease.

Based on this, it is anticipated that construction of Alternative 1 would result in temporary removal of 2.79 acres and permanent loss of 0.92 acre of song sparrow habitat. Existing foraging and nesting habitat would be removed and would require years for recovery. Habitat values may be decreased if Project

activities increase the distribution and abundance of invasive plants. If the Project impacts the hydrology of intermittent streams in areas such as Liebre Gulch or Charlie Canyon, where Project vehicles may pass directly through streambeds to access tower locations, it could have a more long-term impact on riparian vegetation and availability of surface water. This would also be true for RCAs that may be affected by construction within the Alternative 1 area. It is anticipated that upwards of 100 RCAs would be affected along Alternative 1, mainly due to insufficient road width which, in many cases, is a result of vegetation overgrowth along Edison Spring Road and particularly along the Old Ridge Route. Due to the insufficient road width and conditions along Alternative 1, the Forest Service would require that some of the new double-circuit 230 kV structures be constructed by the use of helicopter. Refer to Figure 9, the Helicopter Mitigation Map, which illustrates the locations for Alternative 1.

During Bird Use Count surveys conducted by POWER biologists in October 2010, one or more song sparrows were identified at a location near the juncture of Alternative 1 and Alternative 2, but within the proposed Alternative 1 ROW (POWER 2011). Because the species was identified aurally at this location, the exact number of individuals could not be confirmed.

Cumulative Effects

SCE's Antelope-Pardee 500 kV Transmission Project may cause a cumulative effect to song sparrows along with BRRTP. Within the ANF, Alternative 1 would be near the Antelope-Pardee Project only at its southern terminus, just north of the proposed Haskell Canyon Switching Station, a separation of approximately one mile. Although the Antelope-Pardee Project was expected to largely avoid additional impacts to song sparrow habitat by spanning drainages, avoiding impacts to riparian vegetation and RCAs, and restricting project access to existing roads near riparian habitat, any negative effects to the song sparrow from the Antelope-Pardee Project would exert a cumulate effect on song sparrow with the BRRTP, as song sparrows were documented in 2009 and 2010 directly within the proposed BRRTP ROW.

Riparian habitat within the San Gabriel Mountains on federal and non-federal lands has been affected by development and water diversions and extractions over the years, reducing the quantity and quality of this habitat type. As such, impacts to song sparrow populations likely have occurred due to reduction in habitat quality and quantity for foraging and nesting. Demands on water, and thus riparian/meadow habitat, will likely continue to increase with increasing human populations.

Proposed and planned housing developments within private inholdings and urban interface areas will result in a loss of habitat for song sparrow if areas of suitable riparian vegetation are impacted. Increased recreation use in both dispersed and developed recreation areas near streams will continue to affect song sparrow habitat.

Non-native plant removal and fuel management activities are planned throughout the ANF. The ANF is proposing to extend its efforts at invasive plant removal with its Santa Clara River Watershed Invasive Plant Treatment Project. While the ANF conducted removal of giant reed between 1995 and 2005, the ANF has proposed to extend the scope of the removal activities to include other non-native species such as tamarisk (*Tamarix* sp.), tree-of-heaven (*Ailanthus altissima*), yellow star thistle (*Centaurea solstitialis*), and tree tobacco (*Nicotiana glauca*), among others (USFS 2010a, USFS 2010b). Removal methods being considered include biological control, manual or mechanical removal, burning, or herbicide use, but will be determined for each site. The Forest Service will enforce all necessary mitigation measures for sensitive species as outlined in the project's Purpose and Need and Proposed Action Statement (USFS 2010b). Song sparrows will benefit if these treatments contribute to less encroachment of non-native plants into the riparian area.

The ANF has closed several grazing areas within the forest including the Charlie grazing allotment, located within the Alternative 1 ROW (USFS 2010c). These allotments make up 50,862 acres of NFS lands, with the Charlie grazing allotment taking up 7,558 acres of NFS lands. According to the Forest Service, the allotments have not been grazed for several years (the Charlie grazing allotment was last grazed in 1993) and, to cut administrative costs, it was more beneficial to remove them from livestock grazing opportunities. Based on findings by Chase (2002), it is likely that removing the possibility of future grazing within these areas will benefit song sparrows by increasing nest cover and reducing the likelihood of nest predation by grazing-related vegetation removal or nest destruction.

Cumulative Effects Conclusion

It is anticipated that implementation of Alternative 1, in combination with these past, present, and reasonably foreseeable future actions, would result in the temporary modification of 2.79 acres and permanent loss of 0.92 acre of song sparrow habitat in the analysis area. These amounts are equivalent to 0.06% and 0.02% of the total available song sparrow habitat on the ANF, respectively (USFS 2008). While temporary effects from Alternative 1 would not render the analysis area totally unsuitable for song sparrow, affected areas would be expected to provide habitat of less value than adjacent undeveloped areas.

Alternative 2

Direct and Indirect Effects

Song sparrows are associated with brushy riparian vegetation or the early seral stage of riparian trees. Of the estimated 46.84 acres of suitable song sparrow habitat within the analysis area for Alternative 2, the amount that would be affected by transmission line construction, operation, and maintenance is 6.24 acres of temporary disturbance and 1.52 acres of permanent disturbance. Temporary disturbance represents 13.32% of the total suitable song sparrow habitat within the analysis area for Alternative 2 and 0.14% of the total suitable song sparrow habitat available within the ANF. Permanent disturbance represents 3.25% of the total suitable song sparrow habitat along Alternative 2 and 0.03% of the total suitable song sparrow habitat available within the ANF.

Existing vegetation would be removed on the 6.24 acres temporarily impacted by Alternative 2. Until native vegetation is recovered, this area would not provide suitable habitat for the song sparrow. Once native vegetation such as willow and mulefat is established, the area would provide suitable habitat for the song sparrow. However, this vegetation would require several years to reach the conditions necessary for nesting song sparrows. Post-Project treatments would require efforts to ensure the establishment of native vegetation. If these efforts are not fully successful and there is an increased amount of invasive species, habitat values for the song sparrow would decrease.

Based on this, it is anticipated that construction of Alternative 2 would result in temporary removal of 6.24 acres and permanent loss of 1.52 acres of suitable song sparrow habitat. Existing foraging and nesting habitat would be removed and would require years for recovery. Habitat values may be decreased if Project activities increase the distribution and abundance of invasive plants. If the Project impacts the hydrology of intermittent streams in areas such as in Dry Canyon or Baird Canyon or even perennial areas such as Drinkwater Flat, where Project vehicles may pass directly through streambeds on access roads or to access tower locations, it could have a more long-term impact on riparian vegetation and availability of surface water. This would also be true for RCAs that may be affected by construction on Alternative 2. It is anticipated that 50 RCAs would be affected on Alternative 2, mainly due to insufficient road width.

A song sparrow was identified by POWER biologists during documentation of RCAs in March 2009 directly under Alternative 2 in an area of the ROW between Drinkwater Flat and Baird Canyon (POWER 2010e). Additionally, song sparrows were identified at several locations on the ANF during Bird Use Count surveys conducted by POWER biologists in October 2010 (POWER 2011). They were identified at

two sites under the proposed Alternative 2 ROW near the northern boundary of the ANF. Because individuals at both of these sites were identified aurally, the exact number of birds present at either site is unknown.

Cumulative Effects

SCE's Antelope-Pardee 500 kV Transmission Project may cause a cumulative effect to song sparrows along with BRRTP. Alternative 2 would be approximately two miles west of the Antelope-Pardee Project ROW. Although the Antelope-Pardee Project was expected to largely avoid additional impacts to song sparrow habitat by spanning drainages, avoiding impacts to riparian vegetation and RCAs, and restricting project access to existing roads near riparian habitat, any negative effects to the song sparrow from the Antelope-Pardee Project would exert a cumulative effect on song sparrow with the BRRTP, as song sparrows were documented in 2009 and 2010 directly within the proposed BRRTP ROW.

In April 2009, LADWP conducted unauthorized road grading along City Highline Road, a road that would provide partial access to Alternative 2. The effects of this grading, such as riparian habitat loss, will likely cause a cumulative effect on song sparrows with the BRRTP and any habitat loss or degradation that could occur as a result of BRRTP's construction. The required remedial actions for this grading, such as habitat restoration, may reduce the negative cumulative impacts associated with the other actions by improving the habitat in these areas. One song sparrow was detected in the graded area during RCA surveys prior to this action, but no individuals were detected during subsequent surveys documenting damage (POWER 2010e).

Riparian habitat within the San Gabriel Mountains on federal and non-federal lands has been affected by development and water diversions and extractions over the years, reducing the quantity and quality of this habitat type. As such, impacts to song sparrow populations likely have occurred due to reduction in habitat quality and quantity for foraging and nesting. Demands on water, and thus riparian/meadow habitat, will likely continue to increase with increasing human populations.

Proposed and planned housing developments within private inholdings and urban interface areas will result in a loss of habitat for song sparrow if areas of suitable riparian vegetation are impacted. Increased recreation use in both dispersed and developed recreation areas near streams will continue to affect song sparrow habitat.

Non-native plant removal and fuel management activities are planned throughout the ANF. The ANF is proposing to extend its efforts at invasive plant removal with its Santa Clara River Watershed Invasive Plant Treatment Project. While the ANF conducted removal of giant reed between 1995 and 2005, the ANF has proposed to extend the scope of the removal activities to include other non-native species such as tamarisk (*Tamarix* sp.), tree-of-heaven (*Ailanthus altissima*), yellow star thistle (*Centaurea solstitialis*), and tree tobacco (*Nicotiana glauca*), among others (USFS 2010a, USFS 2010b). Removal methods being considered include biological control, manual or mechanical removal, burning, or herbicide use, but will be determined for each site. The Forest Service will enforce all necessary mitigation measures for sensitive species as outlined in the project's Purpose and Need and Proposed Action Statement (USFS 2010b). Song sparrows will benefit if these treatments contribute to less encroachment of non-native plants into the riparian area.

The ANF has closed several grazing areas within the forest including the Drinkwater grazing allotment (USFS 2010c). The Drinkwater grazing allotment is the area where a song sparrow was detected during 2009 BRRTP RCA surveys along Alternative 2 (POWER 2010e). These allotments make up 50,862 acres of NFS lands total, with the Drinkwater grazing allotment taking up 6,989 acres of NFS lands. According to the Forest Service, the allotments have not been grazed for several years (the Drinkwater grazing allotment was last grazed in 2001) and, to cut administrative costs, it was more beneficial to remove them

from livestock grazing opportunities. Based on findings by Chase (2002), it is likely that removing the possibility of future grazing within these areas will benefit song sparrows by increasing nest cover and reducing the likelihood of nest predation by grazing-related vegetation removal or nest destruction.

Cumulative Effects Conclusion

It is anticipated that implementation of Alternative 2, in combination with these past, present, and reasonably foreseeable future actions, would result in the temporary modification of 6.24 acres and permanent loss of 1.52 acres of song sparrow habitat in the analysis area. These amounts are equivalent to 0.14% and 0.03% of the total suitable song sparrow habitat available within the ANF, respectively (USFS 2008). While temporary effects from the Proposed Action would not render the analysis area totally unsuitable for song sparrow, affected areas would be expected to provide habitat of less value than adjacent undeveloped areas.

Alternative 2a

Direct and Indirect Effects

Song sparrows are associated with brushy riparian vegetation or the early seral stage of riparian trees. Of the estimated 41.84 acres of suitable song sparrow habitat within the analysis area for Alternative 2a, the amount that would be affected by transmission line construction, operation, and maintenance is 5.70 acres of temporary disturbance and 1.83 acres of permanent disturbance. Temporary disturbance represents 13.62% of the total suitable song sparrow habitat available within the analysis area for Alternative 2a, and 0.13% of the total suitable song sparrow habitat within the ANF. Permanent disturbance represents 4.37% of the total suitable song sparrow habitat available within the analysis area for Alternative 2a and 0.04% of the total suitable song sparrow habitat available within the ANF.

Existing vegetation would be removed on the 5.70 acres temporarily impacted by Project activities. Until native vegetation is recovered, this area would not provide suitable habitat for the song sparrow. Once native vegetation such as willow and mulefat is established, the area would provide suitable habitat for the song sparrow. However, this vegetation would require several years to reach the conditions necessary for nesting song sparrows. Post-Project treatments would require efforts to ensure the establishment of native vegetation. If these efforts are not fully successful and there is an increased amount of invasive species, habitat values for the song sparrow would decrease.

Based on this, it is anticipated that the construction of Alternative 2a would result in temporary removal of 5.70 acres and permanent loss of 1.83 acres of song sparrow habitat. Existing foraging and nesting habitat would be removed and would require years for recovery. Habitat values may be decreased if Project activities increase the distribution and abundance of invasive plants. If the Project impacts the hydrology of intermittent streams in areas such as in Dry Canyon or Baird Canyon or even perennial areas such as Drinkwater Flat, where Project vehicles may pass directly through streambeds on access roads or to access tower locations, it could have a more long-term impact on riparian vegetation and availability of surface water. This would also be true for RCAs that may be affected by construction on Alternative 2a. It is anticipated that a total of 78 RCAs would be affected on Alternative 2a.

A song sparrow was identified by POWER biologists during documentation of RCAs in March 2009 directly under Alternative 2a in an area of the ROW between Drinkwater Flat and Baird Canyon (POWER 2010e). Additionally, song sparrows were identified at several locations on the ANF during Bird Use Count surveys conducted by POWER biologists in October 2010 (POWER 2011). They were identified at two sites under the proposed Alternative 2 ROW near the northern boundary of the ANF. While these sites are not within the Alternative 2a corridor, they are in fairly close proximity to it, both being within 0.75 mile of Alternative 2a. Because individuals at both of these sites were identified aurally, the exact number of birds present at either site is unknown.

Cumulative Effects

SCE's Antelope-Pardee 500 kV Transmission Project may cause a cumulative effect to song sparrows along with BRRTP. Alternative 2a would be approximately two miles west of the Antelope-Pardee Project ROW. Although the Antelope-Pardee Project was expected to largely avoid additional impacts to song sparrow habitat by spanning drainages, avoiding impacts to riparian vegetation and RCAs, and restricting project access to existing roads near riparian habitat, any negative effects to the song sparrow from the Antelope-Pardee Project would exert a cumulative effect on song sparrow with the BRRTP.

In April 2009, LADWP conducted unauthorized road grading along City Highline Road, a road that would provide partial access to Alternative 2a. The effects of this grading, such as riparian habitat loss, will likely cause a cumulative effect on song sparrows with the BRRTP and any habitat loss or degradation that could occur as a result of BRRTP's construction. The required remedial actions for this grading, such as habitat restoration, may reduce the negative cumulative impacts associated with the other actions by improving the habitat in these areas. One song sparrow was detected in the graded area during RCA surveys prior to this action, but no individuals were detected during subsequent surveys documenting damage (POWER 2010e).

Riparian habitat within the San Gabriel Mountains on federal and non-federal lands has been affected by development and water diversions and extractions over the years, reducing the quantity and quality of this habitat type. As such, impacts to song sparrow populations likely have occurred due to reduction in habitat quality and quantity for foraging and nesting. Demands on water, and thus riparian/meadow habitat, will likely continue to increase with increasing human populations.

Proposed and planned housing developments within private inholdings and urban interface areas will result in a loss of habitat for song sparrow if areas of suitable riparian vegetation are impacted. Increased recreation use in both dispersed and developed recreation areas near streams will continue to affect song sparrow habitat.

Non-native plant removal and fuel management activities are planned throughout the ANF. The ANF is proposing to extend its efforts at invasive plant removal with its Santa Clara River Watershed Invasive Plant Treatment Project. While the ANF conducted removal of giant reed between 1995 and 2005, the ANF has proposed to extend the scope of the removal activities to include other non-native species such as tamarisk (*Tamarix* sp.), tree-of-heaven (*Ailanthus altissima*), yellow star thistle (*Centaurea solstitialis*), and tree tobacco (*Nicotiana glauca*), among others (USFS 2010a, USFS 2010b). Removal methods being considered include biological control, manual or mechanical removal, burning, or herbicide use, but will be determined for each site. The Forest Service will enforce all necessary mitigation measures for sensitive species as outlined in the project's Purpose and Need and Proposed Action Statement (USFS 2010b). Song sparrows will benefit if these treatments contribute to less encroachment of non-native plants into the riparian area.

The ANF has closed several grazing areas within the forest, including the Drinkwater grazing allotment (USFS 2010c). The Drinkwater grazing allotment is the area where a song sparrow was detected during 2009 RCA surveys along Alternative 2a. These allotments make up 50,862 acres of NFS lands total, with the Drinkwater grazing allotment taking up 6,989 acres of NFS lands. According to the Forest Service, the allotments have not been grazed for several years (the Drinkwater grazing allotment was last grazed in 2001) and, to cut administrative costs, it was more beneficial to remove them from livestock grazing opportunities. Based on findings by Chase (2002), it is likely that removing the possibility of future grazing within these areas will benefit song sparrows by increasing nest cover and reducing the likelihood of nest predation by grazing-related vegetation removal or nest destruction.

Cumulative Effects Conclusion

It is anticipated that implementation of Alternative 2a, in combination with these past, present, and reasonably foreseeable future actions, would result in the temporary modification of 5.70 acres and permanent loss of 1.83 acres of song sparrow habitat in the analysis area. These amounts are equivalent to 0.13% and 0.04% of the total song sparrow habitat available on the ANF, respectively (USFS 2008). While temporary effects from Alternative 2a would not render the analysis area totally unsuitable for song sparrow, affected areas would be expected to provide habitat of less value than adjacent undeveloped areas.

Alternative 3

Direct and Indirect Effects

Song sparrows are associated with brushy riparian vegetation or the early seral stage of riparian trees. Of the estimated 6.47 acres of suitable song sparrow habitat within the analysis area for Alternative 3, the amount that would be affected by transmission line construction, operation, and maintenance is 0.69 acre of temporary disturbance and 0.34 acre of permanent disturbance. Temporary disturbance represents 10.66% of the total suitable song sparrow habitat available within the analysis area for Alternative 3 and 0.02% of the total suitable song sparrow habitat available on the ANF. Permanent disturbance represents 5.26% of the total suitable song sparrow habitat available within the analysis area for Alternative 3 and 0.01% of the total suitable song sparrow habitat available on the ANF.

Existing vegetation would be removed on the 0.69 acre temporarily impacted by Project activities. Until native vegetation is recovered, this area would not provide suitable habitat for the song sparrow. Once native vegetation such as willow and mulefat is established, the area would provide suitable habitat for the song sparrow. However, this vegetation would require several years to reach the conditions necessary for nesting song sparrows. Post-Project treatments would require efforts to ensure the establishment of native vegetation. If these efforts are not fully successful and there is an increased amount of invasive species, habitat values for the song sparrow would decrease.

Based on this, it is anticipated that construction of Alternative 3 would result in temporary removal of 0.69 acre and permanent loss of 0.34 acre of song sparrow habitat. Existing foraging and nesting habitat would be removed and would require years for recovery. Habitat values may be decreased if the Project activities increase the distribution and abundance of invasive plants. If the Project impacts the hydrology of intermittent streams in areas such as in Vasquez Canyon, where Project vehicles may pass directly through the streambed on Lost Creek Road to access tower locations, it could have a more long-term impact on riparian vegetation and availability of surface water. This would also be true for RCAs that may be affected by construction on Alternative 3. It is anticipated that five RCAs would be affected by construction on Alternative 3. Not all of these are immediately within the proposed Alternative 3 ROW, but are present on the ANF in areas where potential access roads, such as Lost Creek Road, would pass through the area.

Cumulative Effects

SCE's Antelope-Pardee 500 kV Transmission Project may cause a cumulative effect to song sparrows along with BRRTP. Although the Antelope-Pardee Project was expected to largely avoid additional impacts to song sparrow habitat by spanning drainages, avoiding impacts to riparian vegetation and RCAs, and restricting project access to existing roads near riparian habitat, any negative effects to the song sparrow from the Antelope-Pardee Project would exert a cumulative effect on song sparrow with the BRRTP.

Riparian habitat within the San Gabriel Mountains on federal and non-federal lands has been affected by development and water diversions and extractions over the years, reducing the quantity and quality of this

habitat type. As such, impacts to song sparrow populations likely have occurred due to reduction in habitat quality and quantity for foraging and nesting. Demands on water, and thus riparian/meadow habitat, will likely continue to increase with increasing human populations.

Proposed and planned housing developments within private inholdings and urban interface areas will result in a loss of habitat for song sparrow if areas of suitable riparian vegetation are impacted. Increased recreation use in both dispersed and developed recreation areas near streams will continue to affect song sparrow habitat.

Non-native plant removal and fuel management activities are planned throughout the ANF. The ANF is proposing to extend its efforts at invasive plant removal with its Santa Clara River Watershed Invasive Plant Treatment Project. While the ANF conducted removal of giant reed between 1995 and 2005, the ANF has proposed to extend the scope of the removal activities to include other non-native species such as tamarisk (*Tamarix* sp.), tree-of-heaven (*Ailanthus altissima*), yellow star thistle (*Centaurea solstitialis*), and tree tobacco (*Nicotiana glauca*), among others (USFS 2010a, USFS 2010b). Removal methods being considered include biological control, manual or mechanical removal, burning, or herbicide use, but will be determined for each site. The Forest Service will enforce all necessary mitigation measures for sensitive species as outlined in the project's Purpose and Need and Proposed Action Statement (USFS 2010b). Song sparrows will benefit if these treatments contribute to less encroachment of non-native plants into the riparian area.

The ANF has closed several grazing areas within the forest including the Texas – Vasquez grazing allotment (USFS 2010c). Approximately 0.65 mile of Alternative 3 would pass through this allotment. These allotments make up 50,862 acres of NFS lands total, with the Texas – Vasquez grazing allotment taking up 4,704 acres of NFS lands. According to the Forest Service, the allotments have not been grazed for several years (the Texas – Vasquez grazing allotment was last grazed in 2002) and, to cut administrative costs, it was more beneficial to remove them from livestock grazing opportunities. Based on findings by Chase (2002), it is likely that removing the possibility of future grazing within these areas will benefit song sparrows by increasing nest cover and reducing the likelihood of nest predation by grazing-related vegetation removal or nest destruction.

Cumulative Effects Conclusion

It is anticipated that implementation of Alternative 3, in combination with these past, present, and reasonably foreseeable future actions, would result in the temporary modification of 0.69 acre and permanent loss of 0.34 acre of song sparrow habitat in the analysis area. These amounts are equivalent to 0.02% and 0.01% of the total suitable song sparrow habitat available within the ANF, respectively (USFS 2008). While temporary effects from Alternative 3 would not render the analysis area totally unsuitable for song sparrow, affected areas would be expected to provide habitat of less value than adjacent undeveloped areas.

Reconductoring

Direct and Indirect Effects

Song sparrows are associated with brushy riparian vegetation or the early seral stage of riparian trees. Of the estimated 87.31 acres of suitable song sparrow habitat within the analysis area for the reconductoring, the amount that would be affected by transmission line construction, operation, and maintenance is 9.60 acres of temporary disturbance and 4.53 acres of permanent disturbance. Temporary disturbance represents 11.00% of the total suitable song sparrow habitat available in the analysis area for the reconductoring and 0.21% of the total suitable song sparrow habitat available on the ANF. Permanent disturbance represents 5.19% of the total suitable song sparrow habitat available within the analysis area for the reconductoring and 0.10% of the total suitable song sparrow habitat available on the ANF. The reconductoring would roughly parallel and be in close proximity to Alternative 2 throughout the ANF.

Therefore, many of the areas that it would affect are similar to the Alternative 2 affected areas. However, because exact disturbance would be dependent on actual road and individual tower conditions at the time of construction, the disturbance numbers given above and the effects described below are based on the assumption that the reconductoring operation would cause a similar amount of disturbance on average as the construction of the new transmission line. Actual disturbance may be lower than what is projected here, but cannot be accurately estimated at this time.

Existing vegetation would be removed on the 9.60 acres temporarily impacted by Project activities. Until native vegetation is recovered, this area would not provide suitable habitat for the song sparrow. Once native vegetation such as willow and mulefat is established, the area would provide suitable habitat for the song sparrow. However, this vegetation would require several years to reach the conditions necessary for nesting song sparrows. Post-Project treatments would require efforts to ensure the establishment of native vegetation. If these efforts are not fully successful and there is an increased amount of invasive species, habitat values for the song sparrow would decrease.

Based on this, it is anticipated that reconductoring of the existing transmission line would result in temporary removal of 9.60 acres and permanent loss of 4.53 acres of song sparrow habitat. Existing foraging and nesting habitat would be removed and would require years for recovery. Habitat values may be decreased if Project activities increase the distribution and abundance of invasive plants. If the Project impacts the hydrology of intermittent streams in areas such as in Dry Canyon or Baird Canyon or even perennial areas such as Drinkwater Flat, where Project vehicles may pass directly through streambeds on access roads or to access tower locations, it could have a more long-term impact on riparian vegetation and availability of surface water. This would also be true for RCAs that may be affected by construction within the reconductoring area. It is anticipated that approximately 50 RCAs would be affected by the reconductoring. Most of the impacted RCAs would be the same as those impacted by Alternative 2, but in the short isolated areas where the two ROWs diverge, there may be a small difference in the number of RCAs affected by construction. RCAs would mainly be affected due to insufficient road width. Some of these were already affected in April 2009 due to unauthorized grading by LADWP, which will be addressed further in the Cumulative Effects section.

A song sparrow was identified by POWER biologists during documentation of RCAs in March 2009 directly under the reconductoring area in a portion of the ROW between Drinkwater Flat and Baird Canyon (POWER 2010e). Additionally, song sparrows were identified at several locations on the ANF during Bird Use Count surveys conducted by POWER biologists in October 2010 (POWER 2011). They were identified at two sites under the existing ROW near the northern boundary of the ANF. Because individuals at both of these sites were identified aurally, the exact number of birds present at either site is unknown.

Cumulative Effects

SCE's Antelope-Pardee 500 kV Transmission Project may cause a cumulative effect to song sparrows along with BRRTP. The reconductoring area would be approximately two miles west of the Antelope-Pardee Project ROW. Although the Antelope-Pardee Project was expected to largely avoid additional impacts to song sparrow habitat by spanning drainages, avoiding impacts to riparian vegetation and RCAs, and restricting project access to existing roads near riparian habitat, any negative effects to the song sparrow from the Antelope-Pardee Project would exert a cumulative effect on song sparrow with the BRRTP.

In April 2009, LADWP conducted unauthorized road grading along City Highline Road, a road that provides partial access to the reconductoring area. The effects of this grading, such as riparian habitat loss, will likely cause a cumulative effect on song sparrows with the BRRTP and any habitat loss or degradation that could occur as a result of BRRTP's construction. The required remedial actions for this

grading, such as habitat restoration, may reduce the negative cumulative impacts associated with the other actions by improving the habitat in these areas. One song sparrow was detected in the graded area during RCA surveys prior to this action, but no individuals were detected during subsequent surveys documenting damage (POWER 2010e).

Riparian habitat within the San Gabriel Mountains on federal and non-federal lands has been affected by development and water diversions and extractions over the years, reducing the quantity and quality of this habitat type. As such, impacts to song sparrow populations likely have occurred due to reduction in habitat quality and quantity for foraging and nesting. Demands on water, and thus riparian/meadow habitat, will likely continue to increase with increasing human populations.

Proposed and planned housing developments within private inholdings and urban interface areas will result in a loss of habitat for song sparrow if areas of suitable riparian vegetation are impacted. Increased recreation use in both dispersed and developed recreation areas near streams will continue to affect song sparrow habitat.

Non-native plant removal and fuel management activities are planned throughout the ANF. The ANF is proposing to extend its efforts at invasive plant removal with its Santa Clara River Watershed Invasive Plant Treatment Project. While the ANF conducted removal of giant reed between 1995 and 2005, the ANF has proposed to extend the scope of the removal activities to include other non-native species such as tamarisk (*Tamarix* sp.), tree-of-heaven (*Ailanthus altissima*), yellow star thistle (*Centaurea solstitialis*), and tree tobacco (*Nicotiana glauca*), among others (USFS 2010a, USFS 2010b). Removal methods being considered include biological control, manual or mechanical removal, burning, or herbicide use, but will be determined for each site. The Forest Service will enforce all necessary mitigation measures for sensitive species as outlined in the project's Purpose and Need and Proposed Action Statement (USFS 2010b). Song sparrows will benefit if these treatments contribute to less encroachment of non-native plants into the riparian area.

The ANF has closed several grazing areas within the forest, including the Drinkwater grazing allotment (USFS 2010c). The Drinkwater grazing allotment is the area where a song sparrow was detected during 2009 RCA surveys along the reconductoring area. These allotments make up 50,862 acres of NFS lands total, with the Drinkwater grazing allotment taking up 6,989 acres of NFS lands. According to the Forest Service, the allotments have not been grazed for several years (the Drinkwater grazing allotment was last grazed in 2001) and, to cut administrative costs, it was more beneficial to remove them from livestock grazing opportunities. Based on findings by Chase (2002), it is likely that removing the possibility of future grazing within these areas will benefit song sparrows by increasing nest cover and reducing the likelihood of nest predation by grazing-related vegetation removal or nest destruction.

Cumulative Effects Conclusion

It is anticipated that reconductoring of the existing transmission line, in combination with these past, present, and reasonably foreseeable future actions, would result in the temporary modification of 9.60 acres and permanent loss of 4.53 acres of song sparrow habitat in the analysis area. These amounts are equivalent to 0.21% and 0.10% of the total suitable song sparrow habitat available on the ANF, respectively (USFS 2008). While temporary effects from the reconductoring would not render the analysis area totally unsuitable for song sparrow, affected areas would be expected to provide habitat of less value than adjacent undeveloped areas.

New 230 kV Circuit

Direct and Indirect Effects

Song sparrows are associated with brushy riparian vegetation or the early seral stage of riparian trees. Of the estimated 15.38 acres of suitable song sparrow habitat within the analysis area for the new circuit, the

amount that would be affected by transmission line construction, operation, and maintenance is 1.65 acres of temporary disturbance and 0.57 acre of permanent disturbance. Temporary disturbance represents 10.73% of the total suitable song sparrow habitat available within the analysis area for the new circuit and 0.04% of the total suitable song sparrow habitat on the ANF. Permanent disturbance represents 3.71% of the total suitable song sparrow habitat available within the analysis area for the new circuit and 0.01% of the total suitable song sparrow habitat available on the ANF. The forested portion and much of the non-forested portion of the new circuit would parallel Alternative 1. Therefore, many of the areas that it would affect within the ANF are similar to the Alternative 1 affected areas. However, because exact disturbance would be dependent on actual road and individual tower conditions at the time of construction, the disturbance numbers given above and the effects described below are based on the assumption that installation of the new circuit would cause a similar amount of disturbance on average as the construction of the new Alternative 1 transmission line. Actual disturbance may be lower than what is projected here, but cannot be accurately estimated at this time.

Existing vegetation would be removed on the 1.65 acres temporarily impacted by Project activities. Until native vegetation is recovered, this area would not provide suitable habitat for the song sparrow. Once native vegetation such as willow and mulefat is established, the area would provide suitable habitat for the song sparrow. However, this vegetation would require several years to reach the conditions necessary for nesting song sparrows. Post-Project treatments would require efforts to ensure the establishment of native vegetation. If these efforts are not fully successful and there is an increased amount of invasive species, habitat values for the song sparrow would decrease.

Based on this, it is anticipated that the proposed activities would result in temporary removal of 1.65 acres and 0.57 acre of song sparrow habitat. Existing foraging and nesting habitat would be removed and would require years for recovery. Habitat values may be decreased if Project activities increase the distribution and abundance of invasive plants. If the Project impacts the hydrology of intermittent streams in areas such as in Charlie Canyon, where Project vehicles may pass directly through the streambed on access roads or to access tower locations, it could have a more long-term impact on riparian vegetation and availability of surface water. This would also be true for RCAs that may be affected by construction on the new circuit. It is expected that one RCA on the ANF may be affected by construction. There are numerous other streambed crossings outside of the forest, such as in Charlie Canyon, but these are not within the ANF.

During Bird Use Count surveys conducted by POWER biologists in October 2010, one or more song sparrows were identified within the vicinity of the new circuit (POWER 2011). Because the species was identified aurally at this location, the exact number of individuals could not be confirmed.

Cumulative Effects

SCE's Antelope-Pardee 500 kV Transmission Project may cause a cumulative effect to song sparrows along with BRRTP. Within the ANF, the new circuit would be near the Antelope-Pardee Project only at its southern terminus, just north of the proposed Haskell Canyon Switching Station, a separation of approximately one mile. Although the Antelope-Pardee Project was expected to largely avoid additional impacts to song sparrow habitat by spanning drainages, avoiding impacts to riparian vegetation and RCAs, and restricting project access to existing roads near riparian habitat, any negative effects to the song sparrow from the Antelope-Pardee Project would exert a cumulative effect on song sparrow with the BRRTP.

Riparian habitat within the San Gabriel Mountains on federal and non-federal lands has been affected by development and water diversions and extractions over the years, reducing the quantity and quality of this habitat type. As such, impacts to song sparrow populations likely have occurred due to reduction in

habitat quality and quantity for foraging and nesting. Demands on water, and thus riparian/meadow habitat, will likely continue to increase with increasing human populations.

Proposed and planned housing developments within private inholdings and urban interface areas will result in a loss of habitat for song sparrow if areas of suitable riparian vegetation are impacted. Increased recreation use in both dispersed and developed recreation areas near streams will continue to affect song sparrow habitat.

Non-native plant removal and fuel management activities are planned throughout the ANF. The ANF is proposing to extend its efforts at invasive plant removal with its Santa Clara River Watershed Invasive Plant Treatment Project. While the ANF conducted removal of giant reed between 1995 and 2005, the ANF has proposed to extend the scope of the removal activities to include other non-native species such as tamarisk (*Tamarix* sp.), tree-of-heaven (*Ailanthus altissima*), yellow star thistle (*Centaurea solstitialis*), and tree tobacco (*Nicotiana glauca*), among others (USFS 2010a, USFS 2010b). Removal methods being considered include biological control, manual or mechanical removal, burning, or herbicide use, but will be determined for each site. The Forest Service will enforce all necessary mitigation measures for sensitive species as outlined in the project's Purpose and Need and Proposed Action Statement (USFS 2010b). Song sparrows will benefit if these treatments contribute to less encroachment of non-native plants into the riparian area.

The ANF has closed several grazing areas within the forest, including the Charlie grazing allotment located within the new circuit ROW (USFS 2010c). These allotments make up 50,862 acres of NFS lands, with the Charlie grazing allotment taking up 7,558 acres of NFS lands. According to the Forest Service, the allotments have not been grazed for several years (the Charlie grazing allotment was last grazed in 1993) and, to cut administrative costs, it was more beneficial to remove them from livestock grazing opportunities. Based on findings by Chase (2002), it is likely that removing the possibility of future grazing within these areas will benefit song sparrows by increasing nest cover and reducing the likelihood of nest predation by grazing-related vegetation removal or nest destruction.

Cumulative Effects Conclusion

It is anticipated that adding a conductor to the existing transmission line, in combination with these past, present, and reasonably foreseeable future actions, would result in the temporary modification of 1.65 acres and permanent loss of 0.57 acre of song sparrow habitat in the analysis area. These amounts are equivalent to 0.04% and 0.01% of the total suitable song sparrow habitat available on the ANF, respectively (USFS 2008). While temporary effects from installation of the new circuit would not render the analysis area totally unsuitable for song sparrow, affected areas would be expected to provide habitat of less value than adjacent undeveloped areas.

7.4.4 Summary of Habitat and Population Status and Trend at the Forest Scale

For monitoring, the Forest Service FEIS (USFS 2005b, Volume 2, page 77) identifies riparian bird species point counts and/or habitat conditions as acceptable methodologies. Trends would be measured according to abundance and/or habitat condition. The sections below summarize the habitat and population status and trend data for the song sparrow. This information is drawn from the detailed information on habitat and population trends in the ANF MIS Report (USFS 2008), which is hereby incorporated by reference.

- *Habitat Status and Trend*

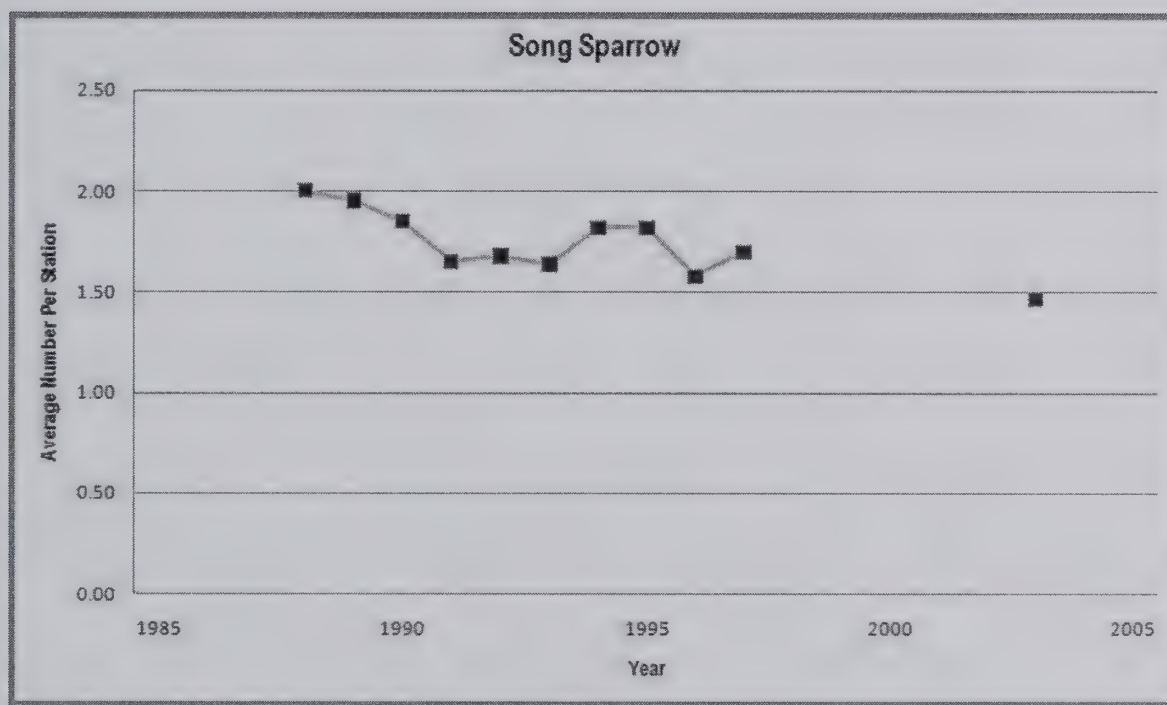
Not utilized as the primary monitoring tool for song sparrows on the ANF.

- *Population Status and Trend at the Forest Scale*

Song sparrows are well-represented on all four Southern California National Forests; they were recorded at 197 out of 206 stations during the 1988-1997 and 2003 riparian bird count surveys. In any one year, song sparrows were detected at 46% of the survey stations. This species is one of a few that were numerous enough to estimate trends with good confidence.

Negative trends in song sparrow abundance were determined from this monitoring. This negative trend was consistent with California Breeding Bird Survey trends as well as trends for other species in the riparian bird count studies for Southern California forests. The following graph illustrates song sparrow detections on the ANF during the riparian bird count surveys conducted from 1988-1997. Detailed information on this population data is presented in the ANF MIS Report (USFS 2008).

FIGURE 11. SONG SPARROW RESULTS FOR ANGELES NATIONAL FOREST



7.4.5 Relationship of Project-Level Impacts to Forest Scale Habitat and Population Trends for the Species

Areas impacted by Project activities would not initially provide suitable habitat for song sparrows. However, with successful implementation of restoration efforts, the Project area would be expected to provide suitable song sparrow habitat in the future (more than five years).

The total area impacted by the Project would be small. Song sparrows are limited to riparian habitats, which represent less than 1% total habitat on the ANF, and the total cumulative amount of temporarily and permanently affected suitable habitat across all components is less than 1% of this amount. The Project-level habitat impacts would not alter or contribute to the existing forest-wide population trends for the song sparrow.

7.5 CALIFORNIA SPOTTED OWL (*STRIX OCCIDENTALIS OCCIDENTALIS*)

7.5.1 Habitat/Species Relationship

The California spotted owl was chosen as an MIS to indicate the health of mature montane conifer forests with dense, multi-layered canopies. The California spotted owl also occupies hardwood forests at low elevations, particularly oak, and studies in the San Bernardino Mountains have indicated that spotted owls may have better reproductive success at these lower elevation habitats because their primary prey, woodrats, are present in high densities in lower elevation areas (Stephenson and Calcarone 1999).

Experts have been concerned about the viability of the Southern California spotted owl population for many years, and this concern has only increased with the damaging drought, recent wildfires, and rapid development of habitat. The cumulative effects of these factors further reduce and isolate California spotted owl populations.

Southern California spotted owls occur within four types of forests: riparian/hardwood, live oak/big cone Douglas-fir, mixed conifer, and redwood/California laurel forests, all of which occur on the four Southern California National Forests except redwood forests, which are only present on Los Padres National Forest (USFS 2008). Spotted owls are estimated to need trees that are at least approximately 15 inches in diameter at breast height (DBH) and 20 feet tall for habitat to be considered suitable (Gutiérrez et al. 1992). Because of this need for larger trees, California spotted owls are particularly susceptible to any fires or disturbances that are strong enough to damage or eliminate whole stands of trees (USFS 2008).

Home ranges for the California spotted owl are believed to be variable depending on the location, specific habitat type, and prey density. Zimmerman et al. (2001) estimated that the home ranges for owl pairs in the San Bernardino Mountains can vary from 800 to 2,016 acres during the breeding season. On the other hand, Zabel et al. (1992) found that home ranges can be upwards of 5,300 acres in the San Bernardino Mountains, or as little as 98 to 243 acres for riparian/hardwood forests in the Cleveland, Angeles, and Los Padres National Forests. Stephenson and Calcarone (1999) estimate a minimum of 300 acres of mature forest habitat is required per pair of California spotted owls.

Due to a lack of comprehensive data, it is difficult to estimate the condition of California spotted owls in Southern California. As of 1994, there were a total of 59 documented California spotted owl territories within the ANF, 48 of which were live oak/big cone Douglas fir and 11 of which were mixed conifer forests (USFS 2008). This data has not been updated since 1994, but due to a historic drought between 2002 and 2005 and the associated losses of mixed conifer and big cone Douglas fir forests, followed by relatively lower annual tree mortalities in the years since (Table 13), it is unknown exactly how many suitable California spotted owl territories remain on the ANF. Stephenson and Calcarone (1999) estimated approximately 60 occurrences on the ANF within the San Gabriel Mountains and an additional 12 occupied areas within the Castaic Ranges of the ANF. Wildfires also play a pivotal role in the survival of California spotted owls and their habitat, particularly in Southern California.

TABLE 13. ACRES OF WOODY PLANT MORTALITY* ON THE ANF

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Acres	394	965	11,570	62,600	3,865	206	7,546	580	299	324

Data from Forest Service Region 5 Forest Health Protection aerial detection surveys (USFS 2005b, Volume 1, page 87; USFS 2004 – 2010).

*Note: The above numbers do not generally include areas with less than one tree per acre (considered "background mortality"). Also, they represent new tree deaths each year, and not necessarily new areas of mortality.

Population information for California spotted owls in Southern California is not strong enough for a reliable determination on population trends. A study submitted to the Forest Service by Franklin et al. (2003) suggested that available population trend data for all California spotted owls do not indicate a

decline in the population, with concern warranted for the San Bernardino population. Franklin also pointed out that his sampling period of seven to ten years may not be long enough to detect meaningful trends in spotted owl population dynamics. However, LaHaye et al. (1994) predicted a high risk of the Southern California meta-population becoming extirpated within the next 30 to 40 years, unless the observed decline was temporary, such as a drought. Surveys conducted in 2003 by LaHaye (2004) found California spotted owl occupancy rates in historic territories to be approximately 50 percent in the San Bernardino Mountains and approximately 20 percent in the San Jacinto Mountains, raising a risk of extirpation in the San Jacinto Mountains without sufficient recolonization.

While population monitoring on the ANF has been irregular over the last 20 years, surveys were conducted from 2005 to 2008 in California spotted owl territory (USFS 2008). The results of these surveys are displayed below in Table 14.

TABLE 14. RESULTS OF ANF SURVEYS IN CALIFORNIA SPOTTED OWL TERRITORIES, 2005 – 2008

YEAR	OCCUPIED SITES LOCATED	SITES SURVEYED	PERCENTAGE OF SURVEYED SITES OCCUPIED	SINGLE MALES	PAIRS	NUMBER OF YOUNG DETECTED
2005	7	-	-	6	1	2
2006	4	22	18%	2	2	1
2007	3	10	30%	2	1	2
2008	5	30	17%	3	2	0

Data from MIS Report for the Angeles National Forest (USFS 2008).

California spotted owl protocol surveys were conducted on ANF for the BRRTTP in 2008, 2009, and 2010. Survey criteria specified that potential habitat would consist of any conifer, oak woodland, or riparian corridor with a closed canopy with several trees larger than 24 inches DBH. During the BRRTTP field assessments, eight sites were determined as potential habitat on Alternative 2, along with one site in the new circuit area (POWER 2010b). However, no California spotted owls were detected during surveys. A total of 25 great-horned owls were detected during surveys, which may have reduced the ability to detect any California spotted owls in the area, as great-horned owls are predators of spotted owls (POWER 2010b).

7.5.2 Project-level Effects Analysis Based on Habitat

Key Habitat Factor(s) for the Analysis: According to the Forest Service FEIS (USFS 2005b, Volume 2, page 78), sustained quality and quantity of mixed conifer forests are key to the health of California spotted owls. These are monitored by keeping track of occupied territories and/or habitat conditions and are often influenced by wildfire occurrences. Therefore, mixed conifer forests within the Project area are considered potentially suitable habitat that could be potentially impacted by the BRRTTP. The Forest Service uses a different vegetation community classification system (CalVeg) than BRRTTP (Holland [1986]); BRRTTP analysis utilized Holland (1986) vegetation communities to produce the estimated disturbance impacts listed in Table 3. The table below illustrates the expected correlation between the Holland (1986) vegetation communities that BRRTTP uses and the CalVeg vegetation communities that the Forest Service uses. The CalVeg communities listed below are those that are cited by the Forest Service as being suitable for California spotted owl in the ANF MIS Report (USFS 2008). Correlations were determined based on mutual dominant or associated species and features of respective communities. For some of the communities below, a clear link can be seen between a Holland (1986) community and a CalVeg community. For instance, the Holland (1986) "Interior Live Oak Chaparral" is closely correlated with the CalVeg "Interior Live Oak Alliance," as well as with the "Interior Mixed Hardwood Alliance," which contains numerous co-dominant species. However, species composition elements of Interior Live Oak Chaparral are also present within the CalVeg community "Canyon Live Oak Alliance," where

interior live oaks are an associate species. "Southern Coast Live Oak Riparian Forest," however, has no direct correlation with the CalVeg communities listed by the Forest Service as being suitable habitat for California spotted owl (USFS 2008). Alternatively, coast live oaks are associated species of both the "Fremont Cottonwood Alliance" and "Interior Mixed Hardwood Alliance" communities, so these were listed in the table below as containing elements of this community while not being exact substitutions. The CalVeg communities "Bigcone Douglas Fir Alliance," "Eastside Pine Alliance," "Mixed Conifer-Fir Alliance," "Mixed Conifer-Pine Alliance," "Ponderosa Pine Alliance," "Gray Pine Alliance," "Coulter Pine Alliance," "Black Oak Alliance," "Valley Oak Alliance," "Black Cottonwood Alliance," and "California Bay Alliance" were not included because their dominant species were not detected in the BRRTP vicinity during 2008 – 2010 botanical surveys or were not in great enough numbers to be dominant species in the areas detected. Because not all chaparral communities would necessarily be in areas that are suitable for California spotted owl nesting and foraging proximity, only arboreal-dominated vegetation communities are included below.

TABLE 15. BRRTP HOLLAND (1986) COMMUNITIES AND CORRELATING FOREST SERVICE CALVEG COMMUNITIES – SPOTTED OWL

BRRTP SUITABLE CALIFORNIA SPOTTED OWL VEGETATION COMMUNITIES	CORRELATING CALVEG CALIFORNIA SPOTTED OWL VEGETATION COMMUNITIES
Canyon Live Oak Forest	Canyon Live Oak Alliance Interior Mixed Hardwood Alliance
Interior Live Oak Chaparral	<i>Canyon Live Oak Alliance</i> Interior Live Oak Alliance Interior Mixed Hardwood Alliance
Southern Coast Live Oak Riparian Forest	<i>Fremont Cottonwood Alliance</i> Interior Mixed Hardwood Alliance
Southern Cottonwood Willow Riparian Forest	Fremont Cottonwood Alliance <i>White Alder Alliance</i>
Southern Riparian Scrub	<i>Fremont Cottonwood Alliance</i> <i>White Alder Alliance</i>
Southern Sycamore Alder Riparian Woodland	<i>Fremont Cottonwood Alliance</i> White Alder Alliance
Southern Willow Scrub	<i>Fremont Cottonwood Alliance</i> <i>White Alder Alliance</i>

Note: CalVeg communities in italics are those that may contain strong elements of the Holland (1986) communities, but for which the dominant species in the Holland community is an associate, not a dominant, species of the CalVeg community.

Analysis Area for Project-level Effects Analysis: The analysis area for direct, indirect, and cumulative effects of the BRRTP on California spotted owls varies according to Project components, which overlap and encompass different vegetation areas. Since the Forest Service CalVeg and the BRRTP Holland (1986) community classification systems vary, the BRRTP vegetation communities were verified for similarity to appropriate CalVeg communities in Table 15 above. Thus, while communities may not be exactly the same, the substitution between classification systems is close enough that disturbance to the BRRTP communities listed in Table 15 above should correlate closely to disturbance to California spotted owl habitat as defined by the Forest Service CalVeg system. Using these correlations, the total acreage of California spotted owl habitat within each Project alternative or component on the ANF is presented in Table 16 below. These calculations are based on the 500-foot wide corridor and include projected habitat disturbance from construction staging areas and access roads.

TABLE 16. TOTAL CALIFORNIA SPOTTED OWL HABITAT ACREAGE OF EACH BR RTP COMPONENT ON ANF AND PERCENTAGE OF TOTAL HABITAT ON ANF

	ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 2A*	ALTERNATIVE 3	RECONDUCTORING	NEW CIRCUIT
Total Acres of Suitable California Spotted Owl Habitat within the Analysis Area	26.92	46.84	95.76	6.47	87.31	15.38
Percentage of Total California Spotted Owl Habitat on ANF (142,953 acres)	0.02%	0.03%	0.07%	$4.53 \times 10^{-3}\%$	0.06%	0.01%
Total Acres of Suitable California Spotted Owl Habitat Impacted within the Analysis Area†	3.71	7.76	15.19	0.69	14.13	2.22
Percentage Impacted of Total California Spotted Owl Habitat on the ANF (142,953 acres)	$2.60 \times 10^{-3}\%$	0.01%	0.01%	$4.83 \times 10^{-4}\%$	0.01%	$1.55 \times 10^{-3}\%$

* The total acres of suitable habitat present and impacted within this alternative are underestimated due to the uncertain number of acres of the Canyon Live Oak Forest vegetation community on this alternative. These numbers refer to all suitable habitat as displayed in Table 16 except for Canyon Live Oak Forest. Please refer to Table 3 for a full explanation.

† This acreage is calculated based on the maximum temporary and permanent acreages and represents a “worst case scenario” of disturbance.

Current Condition of the Key Habitat Factor(s) in the Analysis Area: The percentage of the total California spotted owl habitat for each component relative to the total ANF is above in Table 16.

7.5.3 Direct and Indirect Effects to California Spotted Owl

If construction activities are concurrent with nesting season, then impact to California spotted owl breeding success is possible, not just with impacts to riparian areas, but with impacts to other spotted owl habitats as mentioned previously (such as live oak or mixed conifer forests). However, construction is expected to be scheduled outside of the typical breeding season, and this is not expected to be a concern. It is expected that there may be some negative direct effects to spotted owls, particularly from construction noise, which may result in displacement, and any tree trimming, which may result in displacement, injury, or mortality of any owls that happen to be present. However, GPs—such as tower avoidance of known habitat or territories, presence of a biological monitor, and efforts to minimize the construction footprint—are expected to reduce the likelihood and severity of any direct effects. One notable indirect effect that may occur is the enhancement of spotted owl habitat through the destruction of neighboring chaparral. Chaparral clearing may enhance spotted owl foraging habitat by eventually providing new plants for woodrats to feed on, increasing the number of woodrats in the area, and by opening up the canopy cover to allow owls to better feed on woodrats and other prey (USFS 2008).

Alternative 1

Direct and Indirect Effects

California spotted owls are associated with mature conifer forests with dense, multi-layered canopies (USFS 2005b, Volume 2, page 78). Of the estimated 26.92 acres of suitable California spotted owl habitat within the analysis area for Alternative 1, the amount that would be affected by transmission line construction, operation, and maintenance is 2.79 acres of temporary disturbance and 0.92 acre of permanent disturbance. Temporary disturbance represents 10.36% of the total suitable California spotted owl habitat available within the analysis area for Alternative 1 and $1.95 \times 10^{-3}\%$ of the total suitable California spotted owl habitat on the ANF. Permanent disturbance represents 3.42% of the total suitable

California spotted owl habitat available within the analysis area for Alternative 1 and $6.44 \times 10^{-4}\%$ of the total suitable California spotted owl habitat available on the ANF.

Existing vegetation would be removed on the 2.79 acres temporarily impacted by Project activities. Until native vegetation is recovered, this area would not provide suitable habitat for the California spotted owl. While actual tree removal is expected to be minimal, if at all necessary, trees may be trimmed and understory would be removed in areas as required for construction. Once native vegetation has reestablished, the area would provide suitable habitat for the California spotted owl. However, this vegetation would require several years to reach the conditions necessary for nesting spotted owls. Post-Project treatments would require efforts to ensure the establishment of native vegetation. If these efforts are not fully successful and there is an increased amount of invasive species, habitat values for the California spotted owl would decrease.

Based on this, it is anticipated that construction of Alternative 1 would result in temporary removal of 2.79 acres and permanent loss of 0.92 acre of suitable California spotted owl habitat. Existing foraging and nesting habitat would be removed and would require years for recovery. Habitat values may be decreased if Project activities increase the distribution and abundance of invasive plants. During habitat assessments preceding the California spotted owl protocol surveys conducted for the BRRTP from 2008 to 2010, numerous survey areas were located along or in the vicinity of the Alternative 1 corridor. These were located at Apple Canyon, Copco Road, Fisher Spring, Liebre Gulch, Oak Flat Spring, Reservoir Hill, Whitaker Summit, Templin Highway, Charlie Canyon, and Dry Canyon (POWER 2010b). Of these, final calling sites were located as follows: two sites at Fisher Spring, four sites at Liebre Gulch, three sites at Oak Flat Spring, and three sites at Dry Canyon. The remaining areas did not sufficiently meet suitable habitat requirements for the California spotted owl to warrant inclusion as calling sites. Liebre Gulch contains mixed conifer forest habitat, while the other three areas contain oak woodlands. No California spotted owls were identified at any of these calling sites during the multi-year survey effort.

Cumulative Impacts

SCE's Antelope-Pardee 500 kV Transmission Project may cause a cumulative effect to California spotted owls along with BRRTP. Within the ANF, Alternative 1 would be near the Antelope-Pardee Project only at its southern terminus, just north of the proposed Haskell Canyon Switching Station, a separation of approximately one mile. While the Antelope-Pardee Project was not expected to have any effect on California spotted owl due to absence of suitable habitat or mitigation that would help avoid impacts to suitable habitat, any project-related effects that did occur to spotted owl habitat such as conifer stands or oak woodlands may exert a cumulative effect on this species and its habitat with the BRRTP (Aspen 2006).

Non-native plant removal and fuel management activities are planned throughout the Forest. The emphasis of these treatments is to reduce fuel hazards and non-native plants, and where fuel hazard reduction occurs in coniferous stands around plantations or other areas, this may degrade suitable California spotted owl habitat. The various fuel reduction or fuelbreak projects that have occurred in the past or are proposed for the future at plantations within ANF may reduce spotted owl habitat and/or drive individuals or pairs from the area based on the act of thinning, pruning, chipping, or burning surrounding vegetation, including coniferous trees or parts of trees (USFS 2009 – 2010).

Cumulative Effects Conclusion

It is anticipated that implementation of Alternative 1, in combination with these past, present, and reasonably foreseeable future actions, would result in the temporary modification of 2.79 acres and permanent loss of 0.92 acre of California spotted owl habitat in the analysis area. These amounts are equivalent to $1.95 \times 10^{-3}\%$ and $6.44 \times 10^{-4}\%$ of the total suitable California spotted owl habitat available on the ANF, respectively (USFS 2008). While temporary effects from Alternative 1 would not render the

analysis area totally unsuitable for California spotted owl, affected areas would be expected to provide habitat of less value than adjacent undeveloped areas.

Alternative 2

Direct and Indirect Effects

California spotted owls are associated with mature conifer forests with dense, multi-layered canopies (USFS 2005b, Volume 2, page 78). Of the estimated 46.84 acres of suitable California spotted owl habitat within the analysis area for Alternative 2, the amount that would be affected by transmission line construction, operation, and maintenance is 6.24 acres of temporary disturbance and 1.52 acres of permanent disturbance. Temporary disturbance represents 13.32% of the total suitable California spotted owl habitat available within the analysis area for Alternative 2 and $4.37 \times 10^{-3}\%$ of the total suitable California spotted owl habitat on the ANF. Permanent disturbance represents 3.25% of the total suitable California spotted owl habitat available within the analysis area for Alternative 2 and $1.06 \times 10^{-3}\%$ of the total ANF.

Existing vegetation would be removed on the 6.24 acres temporarily impacted by Project activities. Until native vegetation is recovered, this area would not provide suitable habitat for the California spotted owl. While actual tree removal is expected to be minimal, if at all necessary, trees may be trimmed and understory would be removed in areas as required for construction. Once native vegetation has reestablished, the area would provide suitable habitat for the California spotted owl. However, this vegetation would require several years to reach the conditions necessary for nesting spotted owls. Post-Project treatments would require efforts to ensure the establishment of native vegetation. If these efforts are not fully successful and there is an increased amount of invasive species, habitat values for the California spotted owl would decrease.

Based on this, it is anticipated that construction of Alternative 2 would result in temporary removal of 6.24 acres and permanent loss of 1.52 acres of suitable California spotted owl habitat. Existing foraging and nesting habitat would be removed and would require years for recovery. Habitat values may be decreased if Project activities increase the distribution and abundance of invasive plants. During habitat assessments preceding the California spotted owl protocol surveys conducted for the BRRTP from 2008 to 2010, numerous survey areas were located along or in the vicinity of the Alternative 2 corridor. These were located at Baird Canyon, Calle Pozo Verde, Clearwater Canyon, Craig Spring, San Francisquito Canyon, Grass Mountain, Lake Hughes Road, Pettinger Canyon, South Grass Mountain, South Portal Canyon, Spunky Canyon, and Tule Ridge (POWER 2010b). Of these, final calling sites were located as follows: two sites at Baird Canyon, four sites at Clearwater Canyon, one site at Craig Spring, 17 sites in San Francisquito Canyon, two sites at Grass Mountain, three sites at Pettinger Canyon, seven sites at South Portal Canyon, and five sites at Spunky Canyon. The remaining areas did not sufficiently meet suitable habitat requirements for the California spotted owl to warrant inclusion as calling sites. Clearwater, San Francisquito, Pettinger, South Portal, and Spunky Canyons represent riparian corridors, while Craig Spring is a tree farm and Grass Mountain has a medium patch of good arboreal habitat. No California spotted owls were identified at any of these calling sites during the multi-year survey effort.

Cumulative Impacts

SCE's Antelope-Pardee 500 kV Transmission Project may cause a cumulative effect to California spotted owls along with BRRTP. The Alternative 2 ROW would be approximately two miles west of the Antelope-Pardee Project ROW. While the Antelope-Pardee Project was not expected to have any effect on California spotted owl due to absence of suitable habitat or mitigation that would help avoid impacts to suitable habitat, any project-related effects that did occur to spotted owl habitat such as conifer stands or oak woodlands may exert a cumulative effect on this species and its habitat with the BRRTP (Aspen 2006).

In April 2009, LADWP conducted unauthorized road grading along City Highline Road, a road that would provide partial access to Alternative 2. The effects of this grading, such as riparian habitat loss, may cause a cumulative effect on California spotted owls with the BR RTP. Several spotted owl habitat sites were identified within the graded area, and these areas were affected due to the trimming of live oaks during grading. At least ten oaks were trimmed during grading activities, causing a small reduction in the amount of habitat that spotted owls have to nest in. Additional trimming or disturbance in this area as a result of BR RTP's construction would exert a cumulative effect on suitable habitat in this area.

Non-native plant removal and fuel management activities are planned throughout the Forest. The emphasis of these treatments is to reduce fuel hazards and non-native plants, and where fuel hazard reduction occurs in coniferous stands around plantations or other areas, this may degrade suitable California spotted owl habitat. The various fuel reduction or fuelbreak projects that have occurred in the past or are proposed for the future at plantations within ANF may reduce spotted owl habitat and/or drive individuals or pairs from the area based on the act of thinning, pruning, chipping, or burning surrounding vegetation, including coniferous trees or parts of trees (USFS 2009 – 2010).

LADWP plans to replace the current interior lining of its Bee Canyon sag pipe in the future. This section of the aqueduct is located approximately 1.5 miles from the end of the graded area referenced above. The project area is immediately adjacent to oak woodland that may provide some suitable habitat for California spotted owl. Project activities may cause a small temporary disturbance from construction noise and possible habitat loss, but any cumulative effect is likely to be minimal due to the small nature of the Bee Canyon project.

Cumulative Effects Conclusion

It is anticipated that implementation of Alternative 2, in combination with these past, present, and reasonably foreseeable future actions, would result in the temporary modification of 6.24 acres and permanent loss of 1.52 acres of California spotted owl habitat in the analysis area. These amounts are equivalent to $4.37 \times 10^{-3}\%$ and $1.06 \times 10^{-3}\%$ of the total suitable California spotted owl habitat available on the ANF, respectively (USFS 2008). While temporary effects from the Proposed Action would not render the analysis area totally unsuitable for California spotted owl, affected area would be expected to provide habitat of less value than adjacent undeveloped areas.

Alternative 2a

Direct and Indirect Effects

California spotted owls are associated with mature conifer forests with dense, multi-layered canopies (USFS 2005b, Volume 2, page 78). Of the estimated 95.76 acres of suitable California spotted owl habitat within the analysis area for Alternative 2a, the amount that would be affected by transmission line construction, operation, and maintenance is 11.30 acres of temporary disturbance and 3.89 acres of permanent disturbance. Temporary disturbance represents 11.80% of the total suitable California spotted owl habitat available within the analysis area for Alternative 2a and 0.01% of the total suitable California spotted owl habitat available on the ANF. Permanent disturbance represents 4.06% of the total suitable California spotted owl habitat available within the analysis area for Alternative 2a and $2.72 \times 10^{-3}\%$ of the total suitable California spotted owl habitat available on the ANF.

Existing vegetation would be removed on the 11.30 acres temporarily impacted by Project activities. Until native vegetation is recovered, this area would not provide suitable habitat for the California spotted owl. While actual tree removal is expected to be minimal, if at all necessary, trees may be trimmed and understory would be removed in areas as required for construction. Once native vegetation has reestablished, the area would provide suitable habitat for the California spotted owl. However, this vegetation would require several years to reach the conditions necessary for nesting spotted owls. Post-

Project treatments would require efforts to ensure the establishment of native vegetation. If these efforts are not fully successful and there is an increased amount of invasive species, habitat values for the California spotted owl would decrease.

Based on this, it is anticipated that construction of Alternative 2a would result in temporary removal of 11.30 acres and permanent loss of 3.89 acres of suitable California spotted owl habitat. Existing foraging and nesting habitat would be removed and would require years for recovery. Habitat values may be decreased if Project activities increase the distribution and abundance of invasive plants. During habitat assessments preceding the California spotted owl protocol surveys conducted for the BRRTP from 2008 to 2010, numerous survey areas were located along or in the vicinity of the Alternative 2a corridor. These were located at Baird Canyon, Calle Pozo Verde, Clearwater Canyon, Craig Spring, San Francisquito Canyon, Grass Mountain, Lake Hughes Road, Pettinger Canyon, South Grass Mountain, South Portal Canyon, Spunky Canyon, and Tule Ridge (POWER 2010b). Of these, final calling sites were located as follows: two sites at Baird Canyon, four sites at Clearwater Canyon, one site at Craig Spring, 17 sites in San Francisquito Canyon, two sites at Grass Mountain, three sites at Pettinger Canyon, seven sites at South Portal Canyon, and five sites at Spunky Canyon. The remaining areas did not sufficiently meet suitable habitat requirements for the California spotted owl to warrant inclusion as calling sites. Clearwater, San Francisquito, Pettinger, South Portal, and Spunky Canyons represent riparian corridors, while Craig Spring is a tree farm and Grass Mountain has a medium patch of good arboreal habitat. No California spotted owls were identified at any of these calling sites during the multi-year survey effort, and no additional calling sites were added to the survey effort that were on the Alternative 2a alignment independent of Alternative 2 surveys.

Cumulative Impacts

SCE's Antelope-Pardee 500 kV Transmission Project may cause a cumulative effect to California spotted owls along with BRRTP. The Alternative 2a ROW would be approximately two miles west of the Antelope-Pardee Project ROW. While the Antelope-Pardee Project was not expected to have any effect on California spotted owl due to absence of suitable habitat or mitigation that would help avoid impacts to suitable habitat, any project-related effects that did occur to spotted owl habitat such as conifer stands or oak woodlands may exert a cumulative effect on this species and its habitat with the BRRTP (Aspen 2006).

In April 2009, LADWP conducted unauthorized road grading along City Highline Road, a road that would provide partial access to Alternative 2a. The effects of this grading, such as riparian habitat loss, may cause a cumulative effect on California spotted owls with the BRRTP. Several spotted owl habitat sites were identified within the graded area, and these areas were affected due to the trimming of live oaks during grading. At least ten oaks were trimmed during grading activities, causing a small reduction in the amount of habitat that spotted owls have to nest in. Additional trimming or disturbance in this area as a result of BRRTP's construction would exert a cumulative effect on suitable habitat in this area.

Non-native plant removal and fuel management activities are planned throughout the Forest. The emphasis of these treatments is to reduce fuel hazards and non-native plants, and where fuel hazard reduction occurs in coniferous stands around plantations or other areas, this may degrade suitable California spotted owl habitat. The various fuel reduction or fuelbreak projects that have occurred in the past or are proposed for the future at plantations within ANF may reduce spotted owl habitat and/or drive individuals or pairs from the area based on the act of thinning, pruning, chipping, or burning surrounding vegetation, including coniferous trees or parts of trees (USFS 2009 – 2010).

LADWP plans to replace the current interior lining of its Bee Canyon sag pipe in the future. This section of the aqueduct is located approximately 1.5 miles from the end of the graded area referenced above. The project area is immediately adjacent to oak woodland that may provide some suitable habitat for

California spotted owl. Project activities may cause a small temporary disturbance from construction noise and possible habitat loss, but any cumulative effect is likely to be minimal due to the small nature of the Bee Canyon project.

Cumulative Effects Conclusion

It is anticipated that implementation of Alternative 2a, in combination with these past, present, and reasonably foreseeable future actions, would result in the temporary modification of 11.30 acres and permanent loss of 3.89 acres of California spotted owl habitat in the analysis area. These amounts are equivalent to 0.01% and $2.72 \times 10^{-3}\%$ of the total suitable California spotted owl habitat available on the ANF, respectively (USFS 2008). While temporary effects from Alternative 2a would not render the analysis area totally unsuitable for California spotted owl, affected areas would be expected to provide habitat of less value than adjacent undeveloped areas.

Alternative 3

Direct and Indirect Effects

California spotted owls are associated with mature conifer forests with dense, multi-layered canopies (USFS 2005b, Volume 2, page 78). Of the estimated 6.47 acres of suitable California spotted owl habitat within the analysis area for Alternative 3, the amount that would be affected by transmission line construction, operation, and maintenance is 0.69 acre of temporary disturbance and 0.34 acre of permanent disturbance. Temporary disturbance represents 10.66% of the total suitable California spotted owl habitat available within the analysis area for Alternative 3 and $4.83 \times 10^{-4}\%$ of the total suitable California spotted owl habitat available on the ANF. Permanent disturbance represents 5.26% of the total suitable California spotted owl habitat available within the analysis area for Alternative 3 and $2.38 \times 10^{-4}\%$ of the total suitable California spotted owl habitat available on the ANF.

Existing vegetation would be removed on the 0.69 acre impacted by Project activities. Until native vegetation is recovered, this area would not provide suitable habitat for the California spotted owl. While actual tree removal is expected to be minimal, if at all necessary, trees may be trimmed and understory would be removed in areas as required for construction. Once native vegetation has reestablished, the area would provide suitable habitat for the California spotted owl. However, this vegetation would require several years to reach the conditions necessary for nesting spotted owls. Post-Project treatments would require efforts to ensure the establishment of native vegetation. If these efforts are not fully successful and there is an increased amount of invasive species, habitat values for the California spotted owl would decrease.

Based on this, it is anticipated that construction of Alternative 3 would result in temporary removal of 0.69 acre and permanent loss of 0.34 acre of suitable California spotted owl habitat. Existing foraging and nesting habitat would be removed and would require years for recovery. Habitat values may be decreased if Project activities increase the distribution and abundance of invasive plants. During habitat assessments preceding the California spotted owl protocol surveys conducted for the BRRTP from 2008 to 2010, numerous survey areas were located along or in the vicinity of the Alternative 3 corridor. These were located at Anthony Road, Mint Canyon, and Vasquez Canyon (POWER 2010b). However, none of these areas sufficiently met suitable habitat requirements for the California spotted owl to warrant inclusion as calling sites, and therefore no surveys were conducted along Alternative 3.

Cumulative Impacts

SCE's Antelope-Pardee 500 kV Transmission Project may cause a cumulative effect to California spotted owls along with BRRTP. While the Antelope-Pardee Project was not expected to have any effect on California spotted owl due to absence of suitable habitat or mitigation that would help avoid impacts to suitable habitat, any project-related effects that did occur to spotted owl habitat such as conifer stands or

oak woodlands may exert a cumulative effect on this species and its habitat with the BR RTP (Aspen 2006).

Non-native plant removal and fuel management activities are planned throughout the Forest. The emphasis of these treatments is to reduce fuel hazards and non-native plants, and where fuel hazard reduction occurs in coniferous stands around plantations or other areas, this may degrade suitable California spotted owl habitat. The various fuel reduction or fuelbreak projects that have occurred in the past or are proposed for the future at plantations within ANF may reduce spotted owl habitat and/or drive individuals or pairs from the area based on the act of thinning, pruning, chipping, or burning surrounding vegetation, including coniferous trees or parts of trees (USFS 2009 – 2010).

Cumulative Effects Conclusion

It is anticipated that implementation of Alternative 3, in combination with these past, present, and reasonably foreseeable future actions, would result in the temporary modification of 0.69 acre and permanent loss of 0.34 acre of California spotted owl habitat in the analysis area. These amounts are equivalent to $4.83 \times 10^{-4}\%$ and $2.38 \times 10^{-4}\%$ of the total suitable California spotted owl habitat available on the ANF, respectively (USFS 2008). While temporary effects from Alternative 3 would not render the analysis area totally unsuitable for California spotted owl, affected areas would be expected to provide habitat of less value than adjacent undeveloped areas.

Reconductoring

Direct and Indirect Effects

California spotted owls are associated with mature conifer forests with dense, multi-layered canopies (USFS 2005b, Volume 2, page 78). Of the estimated 87.31 acres of suitable California spotted owl habitat within the analysis area for the reconductoring, the amount that would be affected by transmission line construction, operation, and maintenance is 9.60 acres of temporary disturbance and 4.53 acres of permanent disturbance. Temporary disturbance represents 11.00% of the total suitable California spotted owl habitat available within the analysis area for the reconductoring and 0.01% of the total suitable California spotted owl habitat available on the ANF. Permanent disturbance represents 5.19% of the total suitable California spotted owl habitat available within the analysis area for the reconductoring and $3.17 \times 10^{-3}\%$ of the total suitable California spotted owl habitat available on the ANF. The reconductoring would roughly parallel and be in close proximity to Alternative 2 throughout the ANF. Therefore, many of the areas that it would affect would be similar to the Alternative 2 affected areas. However, because exact disturbance would be dependent on actual road and individual tower conditions at the time of construction, the disturbance numbers given above and the effects described below are based on the assumption that the reconductoring operation would cause a similar amount of disturbance on average as the construction of the new transmission line. Actual disturbance may be lower than what is projected here, but cannot be accurately estimated at this time.

Existing vegetation would be removed on the 9.60 acres temporarily impacted by Project activities. Until native vegetation is recovered, this area would not provide suitable habitat for the California spotted owl. While actual tree removal is expected to be minimal, if at all necessary, trees may be trimmed and understory would be removed in areas as required for construction. Once native vegetation has reestablished, the area would provide suitable habitat for the California spotted owl. However, this vegetation would require several years to reach the conditions necessary for nesting spotted owls. Post-Project treatments would require efforts to ensure the establishment of native vegetation. If these efforts are not fully successful and there is an increased amount of invasive species, habitat values for the California spotted owl would decrease.

Based on this, it is anticipated that reconductoring of the existing transmission line would result in temporary removal of 9.60 acres and permanent loss of 4.53 acres of suitable California spotted owl

habitat. Existing foraging and nesting habitat would be removed and would require years for recovery. Habitat values may be decreased if Project activities increase the distribution and abundance of invasive plants. During habitat assessments preceding the California spotted owl protocol surveys conducted for the BRRTP from 2008 to 2010, numerous survey areas were located along or in the vicinity of the reconductoring area. These were located at Baird Canyon, Calle Pozo Verde, Clearwater Canyon, Craig Spring, San Francisquito Canyon, Grass Mountain, Lake Hughes Road, Pettinger Canyon, South Grass Mountain, South Portal Canyon, Spunky Canyon, and Tule Ridge (POWER 2010b). Of these, final calling sites were located as follows: two sites at Baird Canyon, four sites at Clearwater Canyon, one site at Craig Spring, 17 sites in San Francisquito Canyon, two sites at Grass Mountain, three sites at Pettinger Canyon, seven sites at South Portal Canyon, and five sites at Spunky Canyon. The remaining areas did not sufficiently meet suitable habitat requirements for the California spotted owl to warrant inclusion as calling sites. Clearwater, San Francisquito, Pettinger, South Portal, and Spunky Canyons represent riparian corridors, while Craig Spring is a tree farm and Grass Mountain has a medium patch of good arboreal habitat. No California spotted owls were identified at any of these calling sites during the multi-year survey effort.

Cumulative Impacts

SCE's Antelope-Pardee 500 kV Transmission Project may cause a cumulative effect to California spotted owls along with BRRTP. The reconductoring area would be approximately two miles west of the Antelope-Pardee Project ROW. While the Antelope-Pardee Project was not expected to have any effect on California spotted owl due to absence of suitable habitat or mitigation that would help avoid impacts to suitable habitat, any project-related effects that did occur to spotted owl habitat such as conifer stands or oak woodlands may exert a cumulative effect on this species and its habitat with the BRRTP (Aspen 2006).

In April 2009, LADWP conducted unauthorized road grading along City Highline Road, a road that provides partial access to the reconductoring area. The effects of this grading, such as riparian habitat loss, and its required remedial actions, such as habitat restoration, may cause a cumulative effect on California spotted owls with the BRRTP. Several spotted owl habitat sites were identified within the graded area, and these areas were affected due to the trimming of live oaks during grading. At least ten oaks were trimmed during grading activities, causing a small reduction in the amount of habitat that spotted owls have to nest in. Additional trimming or disturbance in this area as a result of BRRTP's construction would exert a cumulative effect on suitable habitat in this area.

Non-native plant removal and fuel management activities are planned throughout the Forest. The emphasis of these treatments is to reduce fuel hazards and non-native plants, and where fuel hazard reduction occurs in coniferous stands around plantations or other areas, this may degrade suitable California spotted owl habitat. The various fuel reduction or fuelbreak projects that have occurred in the past or are proposed for the future at plantations within ANF may reduce spotted owl habitat and/or drive individuals or pairs from the area based on the act of thinning, pruning, chipping, or burning surrounding vegetation, including coniferous trees or parts of trees (USFS 2009 – 2010).

LADWP plans to replace the current interior lining of its Bee Canyon sag pipe in the future. This section of the aqueduct is located approximately 1.5 miles from the end of the graded area referenced above. The project area is immediately adjacent to oak woodland that may provide some suitable habitat for California spotted owl. Project activities may cause a small temporary disturbance from construction noise and possible habitat loss, but any cumulative effect is likely to be minimal due to the small nature of the Bee Canyon project.

Cumulative Effects Conclusion

It is anticipated that implementation of reconductoring along the existing transmission line, in combination with these past, present, and reasonably foreseeable future actions, would result in the temporary modification of 9.60 acres and permanent loss of 4.53 acres of California spotted owl habitat in the analysis area. These amounts are equivalent to 0.01% and $3.17 \times 10^{-3}\%$ of the total suitable California spotted owl habitat available on the ANF, respectively (USFS 2008). While temporary effects from reconductoring would not render the analysis area totally unsuitable for California spotted owl, affected areas would be expected to provide habitat of less value than adjacent undeveloped areas.

New 230 kV Circuit

Direct and Indirect Effects

California spotted owls are associated with mature conifer forests with dense, multi-layered canopies (USFS 2005b, Volume 2, page 78). Of the estimated 15.38 acres of suitable California spotted owl habitat within the ANF in the analysis area for the new circuit, the amount that would be affected by transmission line construction, operation, and maintenance is 1.65 acres of temporary disturbance and 0.57 acre of permanent disturbance. Temporary disturbance represents 10.73% of the total suitable California spotted owl habitat available within the analysis area for the new circuit and $1.15 \times 10^{-3}\%$ of the total suitable California spotted owl habitat available on the ANF. Permanent disturbance represents 3.71% of the total suitable California spotted owl habitat available within the analysis area for the new circuit and $3.99 \times 10^{-4}\%$ of the total suitable California spotted owl habitat available on the ANF. The forested portion and much of the non-forested portion of the new circuit would parallel Alternative 1 for a short distance south of Castaic Reservoir. Therefore, some of the areas that it would affect within the ANF would be similar to the Alternative 1 affected areas. However, because exact disturbance would be dependent on actual road and individual tower conditions at the time of construction, the disturbance numbers given above and the effects described below are based on the assumption that installation of the new circuit operation would cause a similar amount of disturbance on average as the construction of the new Alternative 1 transmission line. Actual disturbance may be lower than what is projected here, but cannot be accurately estimated at this time.

Existing vegetation would be removed on the 1.65 acres temporarily impacted by Project activities. Until native vegetation is recovered, this area would not provide suitable habitat for the California spotted owl. While actual tree removal is expected to be minimal, if at all necessary, trees may be trimmed and understory would be removed in areas as required for construction. Once native vegetation has reestablished, the area would provide suitable habitat for the California spotted owl. However, this vegetation would require several years to reach the conditions necessary for nesting spotted owls. Post-Project treatments would require efforts to ensure the establishment of native vegetation. If these efforts are not fully successful and there is an increased amount of invasive species, habitat values for the California spotted owl would decrease.

Based on this, it is anticipated that installation of the new circuit would result in temporary removal of 1.65 acres and permanent loss of 0.57 acre of suitable California spotted owl habitat. Existing foraging and nesting habitat would be removed and would require years for recovery. Habitat values may be decreased if Project activities increase the distribution and abundance of invasive plants. During habitat assessments preceding the California spotted owl protocol surveys conducted for the BR RTP from 2008 to 2010, two survey areas were located along or in the vicinity of the existing transmission corridor at Charlie Canyon and Dry Canyon (POWER 2010b). Of these two, final calling sites were only located at Dry Canyon, an area with numerous patches of oak woodland where three sites were established. Charlie Canyon did not sufficiently meet suitable habitat requirements for the California spotted owl to warrant inclusion as a calling site. No California spotted owls were identified at any of these calling sites during the multi-year survey effort.

Cumulative Impacts

SCE's Antelope-Pardee 500 kV Transmission Project may cause a cumulative effect to California spotted owls along with BRRTP. Within the ANF, the new circuit would be near the Antelope-Pardee Project only at its southern terminus, just north of the proposed Haskell Canyon Switching Station, a separation of approximately one mile. While the Antelope-Pardee Project was not expected to have any effect on California spotted owl due to absence of suitable habitat or mitigation that would help avoid impacts to suitable habitat, any project-related effects that did occur to spotted owl habitat such as conifer stands or oak woodlands may exert a cumulative effect on this species and its habitat with the BRRTP (Aspen 2006).

Non-native plant removal and fuel management activities are planned throughout the Forest. The emphasis of these treatments is to reduce fuel hazards and non-native plants, and where fuel hazard reduction occurs in coniferous stands around plantations or other areas, this may degrade suitable California spotted owl habitat. The various fuel reduction or fuelbreak projects that have occurred in the past or are proposed for the future at plantations within ANF may reduce spotted owl habitat and/or drive individuals or pairs from the area based on the act of thinning, pruning, chipping, or burning surrounding vegetation, including coniferous trees or parts of trees (USFS 2009 – 2010).

Cumulative Effects Conclusion

It is anticipated that adding a new circuit along the existing transmission line, in combination with these past, present, and reasonably foreseeable future actions, would result in the temporary modification of 1.65 acres and permanent loss of 0.57 acre of California spotted owl habitat in the analysis area. These amounts are equivalent to $1.15 \times 10^{-3}\%$ and $3.99 \times 10^{-4}\%$ of the total suitable California spotted owl habitat available on the ANF, respectively (USFS 2008). While temporary effects from the installation of the new circuit would not render the analysis area totally unsuitable for California spotted owl, affected areas would be expected to provide habitat of less value than adjacent undeveloped areas.

7.5.4 Summary of Habitat and Population Status and Trend at the Forest Scale

For monitoring, the Forest Service FEIS (USFS 2005b, Volume 2, page 78) identifies the tracking of occupied territories and/or habitat conditions by way of the Forest Service Region 5 protocol as an acceptable methodology. The sections below summarize the habitat and population status and trend data for the California spotted owl. This information is drawn from the detailed information on habitat and population trends in the ANF MIS Report (USFS 2008), which is hereby incorporated by reference.

- *Habitat Status and Trend*

The 1994 Final Report of the Southern California Spotted Owl Biologist Team identified 59 territories on the ANF, of which 48 were in live oak/big cone Douglas fir and 11 were in mixed conifer forests (USFS 2008). However, this information has not been updated since and does not include any newly located territories or territories that are located within ANF boundaries but not on federal lands. It is also unknown if these sites were actual breeding territories or just historic response locations. According to CalVeg, suitable spotted owl habitat on the ANF consists of the following vegetation communities, which in total encompass 142,953 acres, or approximately 21%, of the entire forest (USFS 2008).

TABLE 17. CALIFORNIA SPOTTED OWL CALVEG HABITAT ON THE ANGELES NATIONAL FOREST

	CALVEG TYPE	AMOUNT AVAILABLE ON FOREST
DM	Bigcone Douglas Fir Alliance	41370
EP	Eastside Pine Alliance	9817
MF	Mixed Conifer – Fir Alliance	20266
MP	Mixed Conifer – Pine Alliance	12761

	CALVEG TYPE	AMOUNT AVAILABLE ON FOREST
PP	Ponderosa Pine Alliance	620
PD	Gray Pine Alliance	286
PC	Coulter Pine Alliance	4464
NX	Interior Mixed Hardwood Alliance	773
QC	Canyon Live Oak Alliance	49049
QE	White Alder Alliance	1000
QK	Black Oak Alliance	1166
QF	Fremont Cottonwood Alliance	456
QW	Interior Live Oak Alliance	72
QL	Valley Oak Alliance	116
QX	Black Cottonwood Alliance	109
QB	California Bay Alliance	628
	TOTAL	142,953

Aerial surveys are conducted annually to observe woody plant mortality on the four Southern California National Forests. The results of these surveys from 2001 to 2009 can be observed in Table 13. It is expected that suitable California spotted owl habitat will continue to decline over the coming years due to wildfires, drought, and bark beetle infestation (USFS 2008).

- *Population Status and Trend at the Forest Scale*

Surveys for California spotted owl have been conducted on the ANF sporadically over the last 20 years, unfortunately not producing enough data to detect credible population trends. The results of these surveys from 2005 to 2008 can be observed in Table 14.

7.5.5 Relationship of Project-Level Impacts to Forest Scale Habitat and Population Trends for the Species

Areas impacted by Project activities would not initially provide suitable habitat for California spotted owls. However, with successful implementation of restoration efforts, the Project area would be expected to provide suitable spotted owl habitat in the future (more than five years).

The total area impacted by the BRRTTP would be small. California spotted owls inhabit mixed conifer and oak woodlands that encompass 21.56% of the ANF. The Project-level habitat impacts would not alter or contribute to the existing forest-wide population trends for the California spotted owl.

8.0 SUMMARY

The linear nature of this Project means that the total area relative to the landscape is such that a significant loss or improvement to MIS populations across the Forest, or even in the Project vicinity, is unlikely. Project completion would work to increase the reliability of electrical energy to the municipality of Los Angeles, while helping LADWP meet the increasing standards for providing renewable energy to its customers.

The Project may benefit mule deer by increasing the vegetative mosaic, thus creating improved forage opportunities. Mountain lions may be positively affected by the potential increase in deer populations due to improved forage. Song sparrows and arroyo toads would likely experience limited effects due to implementation of Best Management Practices and Mitigation Measures and avoidance of the Riparian Conservation Areas and implementation of the Streambed Alteration Agreement. California spotted owls may suffer a slight reduction in habitat if any oaks or coniferous trees are required to be trimmed for placement of towers or stringing of the transmission line. All of these species, however, will be

cumulatively impacted by the effects of other past, present, and reasonably foreseeable future actions, and these impacts would increase accordingly with implementation of the BR RTP.

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APPENDIX J: WEED RISK ASSESSMENT

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July, 2011

CITY OF LOS ANGELES DEPARTMENT OF WATER AND POWER

Barren Ridge Renewable Transmission Project *Angeles National Forest Weed Risk Assessment*

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Weed Risk Assessment
Barren Ridge Renewable Transmission Project

Angeles National Forest

July 2011

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1.0 INTRODUCTION

The City of Los Angeles Department of Water and Power (LADWP) is proposing to construct the Barren Ridge Renewable Transmission Project (BRRTP or Project) to access clean, renewable resources in the Tehachapi Mountain and Mojave Desert areas, and to improve reliability and upgrade transmission capacity. LADWP, the U.S. Department of Agriculture (USDA) Forest Service (Forest Service) and the U.S. Department of the Interior, Bureau of Land Management (BLM) are preparing a joint Environmental Impact Statement (EIS) / Environmental Impact Report (EIR) for the proposed BRRTP. LADWP is the California Environmental Quality Act (CEQA) Lead Agency, while the Forest Service and BLM are the federal Co-Lead Agencies under the National Environmental Policy Act (NEPA).

The USDA Forest Service Strategic Plan for Fiscal Years 2007 through 2012 identifies the introduction and spread of invasive species as one of the four primary threats to the nation's forests and grasslands (USFS 2007). Some of the goals stated within the Strategic Plan are to "restore, sustain, and enhance the nation's forests and grasslands," and to "reduce adverse impacts from invasive and native species, pests, and diseases" using a 2002 baseline and 2012 target of 90% restoration and/or protection from invasive species (USFS 2007). Several federal laws and regulations require the Forest Service to manage and control noxious weeds on Forest Service lands. Among these are the Federal Noxious Weed Act of 1974, as amended (7 U.S.C. 2801 et seq.), and NEPA (42 U.S.C. 4321-4346) and implementing regulations found at 40 Code of Federal Regulations (CFR) Parts 1500-1508 (FSM 1950; FSH 1909.15). Forest Service Manual 2080 (FSM 2080), which governs the management of noxious weed on Forest Service lands, describes these laws and additional regulations in Section 1 (USFS 1995). In addition, the land management plan for each national forest or forest region, such as the Final EIS, Volume 1, Land Management Plans (USFS 2005), contains policies and guidelines for the prevention and control of invasive species. Plans and guidelines for the control of noxious weeds in the Pacific Southwest Region can also be found in that region's Noxious Weed Management Strategy (USFS 2000). One of the requirements of FSM 2080 is "when any ground disturbing action or activity is proposed, determine the risk of introducing or spreading noxious weeds associated with the proposed action," and further, to "determine the factors that favor the establishment and spread of noxious weeds and design management practices or prescriptions to reduce the risk of infestation or spread of noxious weeds" (USFS 1995).

To comply with FSM 2080, this report 1) analyzes the risk of noxious weed introduction or spread associated with the BRRTP within the Angeles National Forest (ANF; Forest); and 2) identifies appropriate methodology, impact reduction strategies, mitigation measures, and General Practices (GPs) to reduce these risks. This report documents the known presence of noxious weeds along access roads within the Project area and helps to provide guidance for reducing their spread as related to the construction and operation of the BRRTP.

1.1 PROJECT DESCRIPTION

The Project is located in Kern and Los Angeles counties. As proposed by LADWP, it would be 76 miles in length, extending from the Barren Ridge Switching Station to Rinaldi Substation, and extending approximately 12 miles from the Castaic Power Plant to the proposed Haskell Canyon Switching Station. As shown in Figure 1, the proposed BRRTP would include the following:

- Construction of 61 miles of a new 230 kilovolt (kV) double-circuit transmission line from the LADWP Barren Ridge Switching Station to the proposed Haskell Canyon Switching Station. This proposed line would cross 13 miles of National Forest System lands and four miles of public lands managed by the U.S. Department of the Interior, Bureau of Land Management (BLM);

- Construction of 12 miles of a new 230 kV circuit on the existing double-circuit structures from Haskell Canyon to the Castaic Power Plant. This line would cross four miles of National Forest System lands and less than one mile of public lands managed by the BLM;
- Reconductoring of 76 miles of the existing Barren Ridge – Rinaldi (BR-RIN) 230 kV transmission line with larger-capacity conductors between the Barren Ridge Switching Station and the Rinaldi Substation. Thirteen miles of National Forest System lands and four miles of public lands managed by the BLM would be crossed by the reconductoring;
- Construction of a new switching station in Haskell Canyon on LADWP-owned property located north of Santa Clarita and just south of the ANF-managed lands;
- Expansion of the existing Barren Ridge Switching Station.

FIGURE 1. PROPOSED ACTION AND ALTERNATIVES.



1.1.1 Project Component Descriptions

Component 1 - Construction of New 230 kV Double-Circuit Transmission Line

The proposed new double-circuit 230 kV transmission line would consist of two Alternating Current (AC) lines from the Barren Ridge Switching Station to the new Haskell Canyon Switching Station. The proposed structures for the transmission line are self-supporting double-circuit steel lattice towers fabricated from unpainted galvanized steel members. Depending on the topography of the surrounding terrain, the height of the lattice structures would range from approximately 100 to 195 feet, with a typical span of 1,000 to 1,100 feet. Exact structure placement would be determined during engineering surveys and detailed design studies. A variety of engineering, constructability, existing access, and environmental issues are considered during structure siting within permitted rights-of-way (ROWs).

LADWP proposes to utilize self-supporting steel lattice structures and tubular steel poles (TSPs) requiring concrete foundations. The steel lattice structures would require four footings (one for each leg) and TSPs require single footings. All footings would be steel-reinforced concrete piers and cast in place. Each concrete footing for lattice structures would be between 2.5 and 5.0 feet in diameter with an average depth of 20 feet depending on soil conditions. The foundations for TSPs would consist of augured holes approximately five to seven feet in diameter and 15 to 30 feet deep, depending on conditions. Formwork and galvanized steel reinforcing would be assembled in the hole prior to casting concrete in place. Reinforcing steel would become integral to the lower leg of the steel lattice structure during assembly and installation. An above-ground concrete form placed over each hole would result in a final concrete foundation height of 0.5 to 2.0 feet above ground level.

The proposed new double-circuit 230 kV transmission line and installation of the new proposed circuit upgrades on existing structures is a bundled 715.5 kcmil "Starling" ACSS/AW (aluminum conductor steel supported/aluminum-clad steel wire). Each circuit would consist of three phases (or "wires"). To increase the current-carrying capacity of the transmission lines and reduce power loss, the proposed Project would utilize bundled conductors installed for each phase. Bundled conductors consist of two or more conductor cables connected by a non-conducting spacer. The new double-circuit 230 kV transmission line utilizing double-bundled conductors would consist of a total of 12 wires.

Minimum conductor height above the ground, under normal operation, is 31 feet. Greater clearances may be required in certain areas. Minimum conductor clearance would dictate the exact height of each tower based on topography, safety clearance requirements, land use, tower spacing, temperature, wind loading, and electromagnetic field potential. Insulators are used to provide the physical connection of conductors to structures. These system components are made of very low conducting materials (polymer insulators) that inhibit the flow of electric current from energized conductors to ground or to other energized system elements. Insulators and their associated hardware are to be configured in an "I" assembly to support conductors while maintaining required distances between phases and grounded structures. Each "I" string would consist of six-inch diameter insulators between six and eight feet long.

Existing paved and unpaved highways and roads would be used for access whenever possible. Where new access roads are required for construction, operation, or maintenance of the Project, they would be constructed to support the weight of construction vehicles and would typically be 16 feet wide, consisting of a 12- to 14-foot driving surface with a side drainage system between one and two feet in width. Permanent roads would be constructed where necessary, or where it is required by the landowner or land managing agency. On National Forest System (NFS) lands, approved herbicides would be utilized within the Project area on select invasive plant species. Invasive plant surveys/control would continue for the life of the Project.

BLM, USFS, and LADWP identified the four Alternatives below to be carried forward and analyzed in the EIS/EIR, along with the No Action Alternative; they are illustrated in Figure 2-11. All alternatives were evaluated in the biological evaluation.

No Action Alternative

The No Action Alternative is required by NEPA and CEQA. Under the No Action Alternative, the construction of the new 230 kV transmission line, addition of a new circuit on existing structures from Haskell Canyon to the Castaic Power Plant, reconductoring of the existing Barren Ridge to Rinaldi (BR-RIN) 230 kV transmission line, construction of a Haskell Canyon Switching Station, and expansion of the existing Barren Ridge Switching Station would not occur.

Alternative 1

The new 230 kV transmission line for Alternative 1 would be 83 miles long and run from the Barren Ridge Switching Station to the proposed Haskell Canyon Switching Station, and is the westernmost alternative. The addition of 12 miles of a new 230 kV circuit from the Castaic Power Plant to the proposed Haskell Canyon Switching Station would parallel the new 230 kV transmission line for eight miles. Reconductoring of 76 miles of the existing BR-RIN 230 kV transmission line would occur in a separate utility corridor. Alternative 1 has the potential to impact portions of unincorporated Kern and Los Angeles Counties; the communities of Holiday Valley Estates, Castaic, and Saugus; and Cities of Mojave, Santa Clarita, and Los Angeles. Eight and a half miles of the new transmission line would be constructed by helicopter.

Alternative 2 (LADWP's Proposed Action and Federal Agency Preferred Alternative)

The new 230 kV transmission line for Alternative 2 would be 61 miles long, and run from the Barren Ridge Switching Station to the proposed Haskell Canyon Switching Station, paralleling LADWP's existing BR-RIN 230 kV transmission line for the entire length. The existing BR-RIN would be reconducted as part of the Project and, for approximately 1.5 miles, the two new 230 kV circuits would be placed on existing four-circuit structures that are located just north of the proposed Haskell Canyon Switching Station (see Figure 2-3). Impacts would be concentrated along this utility corridor and have the potential to affect portions of unincorporated Kern and Los Angeles Counties; the communities of Willow Springs, Antelope Acres, Elizabeth Lake, Green Valley, and Saugus; and Cities of Mojave, Santa Clarita, and Los Angeles. The addition of a new 230 kV circuit from the Castaic Power Plant to the proposed Haskell Canyon Switching Station would occur in a separate utility corridor from that of the new 230 kV transmission line.

Alternative 2a

Alternative 2a's new 230 kV transmission line from Barren Ridge Switching Station to the proposed Haskell Canyon Switching Station would be 63 miles long, and very similar to Alternative 2. They share the same proposed alignment for 56 miles, but seven miles would be re-routed around Green Valley and would create a new utility corridor through the Angeles National Forest. The same communities as Alternative 2 would be potentially impacted.

Alternative 3

The new 230 kV transmission line for Alternative 3 would be 76 miles long and is the easternmost alternative. Approximately 38 miles of Alternative 3's northern alignment would parallel the reconductoring of BR-RIN, and impacts would be concentrated within the same corridor. Thirty-four miles of the southern portion of the Alternative would be placed in a separate utility corridor from the reconductoring; 11 miles of Alternative 3 would not be within an existing LADWP corridor. The installation of a new 230 kV transmission circuit would be placed on existing structures and not share a

corridor with the new double-circuit 230 kV transmission line from Barren Ridge Switching Station. Alternative 3 has the potential to impact portions of unincorporated Kern and Los Angeles Counties; communities of Willow Springs, Leona Valley, Antelope Acres, Agua Dulce, Castaic and Saugus; and Cities of Mojave, Lancaster, Palmdale, Santa Clarita, and Los Angeles. Of all the Alternatives, this Alternative would have the potential to impact the most areas since the three Project components would be located in three separate areas.

Component 2 - Addition of New 230 kV Circuit

Between the proposed Haskell Canyon Switching Station and the existing Castaic Power Plant, LADWP proposes the addition of 12 miles of a new 230 kV transmission circuit onto existing Castaic – Olive 230 kV transmission line structures. Approximately 300 feet of BLM-managed public lands and four miles of NFS lands would be traversed. This new circuit would be called Castaic – Haskell Canyon #4 and would utilize the same conductor (bundled 715.5 kcmil “Starling” ACSS/AW) as that proposed for the new 230 kV transmission line.

The addition of a new circuit on existing tower structures would require many of the same construction activities associated with a new transmission line. However, all work would be within existing ROWs and no new towers would be constructed. Some towers may need to be modified or reinforced to carry the additional weight of the new conductor.

Component 3 - Reconductoring of Existing Transmission Line

LADWP proposes the reconductoring of approximately 75 miles of the existing BR-RIN 230 kV transmission line with larger conductors from the Barren Ridge Switching Station to Rinaldi Substation (towers 176-1 through 251-1). The existing conductors (954/ 2,312 kcmil) would be replaced with a new 1,433.6 kcmil “Merrimack” ACSS/TW/HS conductor (aluminum conductor steel supported/trapezoidal wires/high strength).

The upgrade of the existing BR-RIN would also require many of the same activities of the new transmission line (surveying of ROW, rehabilitation of existing access and spur roads, clearing of ROW, conductor installation, ground rod installation, and cleanup). The existing conductor would be removed using a pulling line, and replaced with the new conductor. All work would be restricted to within the existing ROW, and no additional ROW would be required. Some of the towers would need to be modified, replaced, and/or foundations reinforced/replaced to carry the additional weight of the new heavier conductor as determined by engineering studies.

Component 4 - Construction of New Switching Station

LADWP proposes the construction of a new switching station in Haskell Canyon, located south of the ANF on LADWP-owned property. The proposed location is at the convergence of several existing and proposed 230 kV transmission lines including the existing BR-RIN, the proposed Barren Ridge – Haskell Canyon, existing Castaic – Northridge, Castaic – Sylmar, Castaic – Olive, and the proposed Castaic – Haskell Canyon.

The station would be approximately 400 feet by 600 feet to accommodate the necessary equipment such as steel support structures, circuit breakers, disconnect switches, and associated equipment, and a relay house and control house containing control and protective relaying equipment. The relay and control houses would each be approximately 30 feet long by 12 feet wide by 10 feet high and constructed of gray concrete block. The station yard would include a paved internal access road approximately 16 feet wide, and would be enclosed by chain-link fencing with barbed-wire extension for security.

Multiple transmission lines will terminate within the switching station (e.g., the new and existing Barren Ridge – Haskell and Castaic – Haskell Canyon transmission lines) and would require the installation of galvanized steel structures. High-voltage bus work consisting of aluminum jumpers and tubing would be installed.

Component 5 - Expansion of Existing Switching Station

LADWP proposes expansion of the existing Barren Ridge Switching Station to the east for an area of 235 feet by 500 feet, which would increase the total station size to 485 feet by 500 feet (approximately 5.6 acres). The expansion area of the station would include electrical structures and equipment for the addition of transmission lines, a material staging area, roadway within the station, and drainage area.

Expansion of the existing switching station would be very similar to the construction of the Haskell Canyon Switching Station. Expansion would consist of preconstruction surveys, site preparation and grading, installation of reinforced concrete foundations, installation of electrical conduits for equipment power and control, and installation of structures and equipment.

It is estimated that approximately 700 cubic yards of concrete would need to be delivered to the switching station site for the foundations. Foundation work would require approximately 80 trips to the site by 40-ton, 10-yard capacity concrete trucks over an approximate 45-day working period. Equipment required for station construction would include graders and excavators, backhoes, drill rigs, concrete trucks, trucks and flatbed trailers. Cranes, man-lifts, portable welding units, line trucks and mechanic trucks would also be required. An estimated eight months with approximately 60 workers would be required to expand the station.

1.1.2 Construction Activities

This section briefly describes the construction activities associated with the Project. The general sequence of transmission line construction includes: surveying and staking the centerline; construction of access roads; ROW clearing; installation of foundations; tower assembling and installation; conductor installation; ground rod installation, and site cleanup and reclamation. The ROW and preliminary design features are briefly summarized below. A general sequence for substation improvements is not included in this section as substation construction activities are site-specific.

Surveying Activities

The LADWP must first obtain survey permits for the portion of the Project crossing federal lands managed by the Forest Service and the BLM, and rights-of-entry for private lands. This would include the issuance of a 50-year term Special Use Permit to LADWP by the Forest Service and a Right-of-Way Grant issued by the BLM. For survey on affected private lands, LADWP would need to negotiate rights-of-entry with the local landowners. Once survey permits are obtained, construction survey work would consist of locating the centerline, tower center hubs, ROW boundaries, and tower access roads. All of these activities would begin approximately one year prior to the start of construction. Cultural resources and threatened and endangered species intensive surveys would begin once the survey of the centerline and access roads is completed and clearly marked.

Construction of Access Roads

The construction, operation, and maintenance of the proposed transmission line would require that heavy vehicles access tower sites along the ROW. All new access roads would be constructed to support the weight of these vehicles and would typically be 16 feet wide, consisting of a 12- to 14-foot driving surface with a side drainage system between one and two feet in width. Road standards would be addressed specifically in the Construction, Operation, and Maintenance Plan (COM Plan) and the Plan of

Development (POD) during the engineering phase of the Project, and prior to a Notice to Proceed from the Forest Service and BLM.

Existing paved and unpaved highways and roads would be used where possible. Roads along existing utility corridors would also be used where possible to minimize new access road construction. In locations where existing roads could be used, that are located in close proximity to the proposed or existing ROW centerlines, only new spur roads to the tower sites would be constructed. The specific locations and design of all new access and spur roads would be determined during final Project design. Table 1 lists the estimated ground disturbance of access and spurs roads based on terrain.

TABLE 1. BRRTP GROUND DISTURBANCE ESTIMATES OF ACCESS AND SPUR ROADS BASED ON TERRAIN

Ground Disturbance Categories	Access Roads			Spur Roads (average width 16 feet)	
	Average Width (feet)	Average Miles of Roads Per Mile of Transmission Line	Average Acres of Disturbance Per Mile of Transmission Line*	Average Miles of Roads per Mile of Transmission Line	Average Acres of Disturbance Per Mile of Transmission Line
1. Existing roads or agricultural land; no widening anticipated	16	n/a	n/a	0.3	0.6
2. Existing 8 ft wide roads that require an additional 8 ft of widening	16	1.0 to 2.5	Permanent 0.9 to 2.4	0.3	0.6
3. Construct new road on flat terrain (0-10%)	16	1.0 to 2.5	Permanent 1.9 to 4.8	0.3	0.6
4. Construct new road on sloping terrain (10-20%)	24*	2.5 to 4.0	Temporary 7.3 to 11.6 Permanent 4.8 to 7.7	0.5	1.0
5. Construct new road on steep terrain (20-30%)	48*	4.0 to 6.0	Temporary 23.3 to 34.9 Permanent 7.7 to 11.6	0.8	1.6
6. Construct road on very steep terrain (greater than 30%)	96*	6.0 to 8.0	Temporary 69.8 to 93.1 Permanent 11.6 to 15.5	1.0	1.9

*Categories 4 through 6 access roads would be re-vegetated back to 16 feet wide after construction of the transmission line.

Wherever possible, roads would be built at right angles to streams and washes. Culverts or other drainage structures would be installed as necessary across stream and washes but the roads would usually follow the natural grade. In addition, road construction would include dust control and erosion control measures in sensitive areas. All existing roads would be left in a condition equal to or better than their condition prior to the construction of the transmission line. Gates would be installed where required at fenced property lines to restrict general vehicular access from or to the ROW. Where identified within the environmental studies for mitigation purposes, access roads may be excluded or limited within specific sensitive areas, such as Riparian Conservation Areas (RCAs) on the ANF.

Clearing Right-of-Way

The clearing of some natural vegetation may be required. However, selective clearing would be performed only when necessary to provide for surveying, electrical safety clearances, line reliability, and maintenance. Topping or removal of mature vegetation, under or near the conductors, would be done to provide adequate electrical clearance as required by the National Electrical Safety Code, the North American Electrical Reliability Corporation, and California Public Utilities Commission General Order 95 standards.

Trees that could fall onto the lines or affect lines during wind-induced line swing would be removed. Normal clearing procedures are to top or remove large trees and not disturb smaller trees. Where there is a direct conflict between trees and clearance standards, the removal of trees would be jointly reviewed and agreed upon between LADWP and the owners or managers of the property. Rights-of-way would not be chemically treated unless necessary to comply with requirements of a permitting agency. On NFS lands, approved herbicides would be utilized within the Project area on select invasive plant species. Invasive plant surveys and control would continue for ten years or until the success criteria is met.

Tower Site Clearing

After access roads are developed, preparation of individual structure sites would be required prior to installation of the structures. At each tower site, leveled areas (pads) would be needed to facilitate the safe operation of equipment such as construction cranes, vehicles, and materials, and to assemble and install towers. At each tower site, a temporary work area of approximately 200 feet square in flat terrain and 200 by 250 feet in areas with slopes greater than eight percent would be needed. However, many tower sites would be considerably smaller depending on the size of the tower, the terrain, and biological resource considerations, among other factors. The work area would be required for the location of tower footings, assembly of the tower, and the necessary crane maneuvers. Vegetation would be cleared or herbaceous vegetation would be crushed only when necessary. After line construction, all pads not needed for normal transmission line maintenance would be restored to previous contours to the extent feasible and revegetated where required by a permitting agency.

Staging Areas and Batch Plants

It is anticipated that several construction yards or staging areas would be required for materials storage, construction equipment, construction vehicles, and temporary construction offices. Staging areas would be approximately five acres in size, and located near each end of the transmission line and at various locations approximately every 15 miles along the proposed line route. Some staging areas may need to be graded; however, vegetation would be crushed in most cases and not bladed. The LADWP would negotiate with landowners for specific locations of the staging areas.

Concrete for use in constructing foundations would be dispensed from a portable concrete batch plant located at approximately 15 mile intervals along the proposed line route. A rubber-tired flatbed truck and tractor would be used to relocate each plant along the ROW. Commercial ready-mix concrete would be used when access to tower construction sites is economically feasible.

The construction yards and batch plants would serve as field offices, reporting locations for workers, parking space for vehicles and equipment, sites for material storage, and stations for equipment maintenance. Facilities would be fenced and their gates locked. Security guards would be stationed where needed. Table 2 lists the estimated disturbance for the various staging sites.

TABLE 2. BRRTP ESTIMATED TEMPORARY DISTURBANCE FOR STAGING SITES

Disturbance Description	Categories 1 through 3 Flat (0 – 10% slope)		Categories 4 through 6 Mountainous (10 – 30% slope)	
	Estimated Disturbance Dimension	Average Disturbance	Estimated Disturbance Dimension	Average Disturbance
Structures	200 x 200 ft. per structure (0.9 acre per structure)	4.6 acres per mile	200 x 250 ft. per structure (1.2 acres per structure)	5.8 acres per mile
Pulling and tensioning sites	200 x 500 ft (2.3 acres) One site every 2.5 miles	0.9 acre per mile	200 x 500 ft (2.3 acres) One site every 2 miles	1.2 acres per mile

Disturbance Description	Categories 1 through 3 Flat (0 – 10% slope)		Categories 4 through 6 Mountainous (10 – 30% slope)	
	Estimated Disturbance Dimension	Average Disturbance	Estimated Disturbance Dimension	Average Disturbance
Sleeving and miscellaneous stringing operations	100 x 200 ft. (0.5 acre) One site every 2.5 miles	0.2 acre per mile	100 x 200 ft (0.5 acre) One site every 2 miles	0.2 acres per mile
Guard structures at major crossings	200 x 300 ft. (1.4 acres) One crossing every 5 miles	0.3 acre per mile	200 x 300 ft. (1.4 acres) One crossing every 5 miles	0.3 acres per mile
Material staging sites	400 x 540 ft. (5 acres) One site every 15 miles	0.3 acre per mile	N/A	N/A
Concrete batch plants (maximum of 3)	5 acres, 30 mile haul distance	0.2 acre per mile	N/A	N/A
Total Temporary Disturbances	6.5 acres per mile		7.5 acres per mile	

Foundation Installation

Tower foundations for the lattice structures would consist of drilled concrete piers. The foundation process would start with the boring of four holes for each lattice structure. The holes would be bored using truck-mounted excavators with various diameter augers to match diameter and depth requirements of the foundation sizes.

For a typical suspension lattice tower, each hole would typically be 2.5 feet in diameter and 20 feet deep, depending on soil conditions. For the larger angle or dead-end structures, wider and deeper foundation holes may be required up to five feet in diameter and 30 or more feet deep, depending on soil conditions. Each foundation would extend above the ground line between six inches and four feet. In extremely sandy soils, soil stabilization by water or a gelling agent may be used during excavation.

Following excavation of the foundation holes, formwork and reinforcing steel would be installed and concrete would be placed. Reinforcing steel cages would be assembled at laydown yards and delivered to each structure location by flatbed truck. The pre-cast footing would be lowered into the excavated foundation hole, positioned, and backfilled. The cast-in-place footing would be installed by placing reinforcing steel and a tower stub into the foundation hole, positioning the stub, and encasing it in concrete. Spoil material would be used for fill where suitable. The foundation excavation and installation would require access to the site by a power auger or drill, a crane, material trucks, and ready-mix trucks. Typical suspension structures would require approximately 25 to 40 cubic yards of concrete and dead-end structures would require approximately 120 cubic yards of concrete.

Tower Assembly and Installation

The size of framing pads for each structure (assembly sites) would be approximately 40,000 square feet. The location of these sites has not yet been determined, but exact locations would be identified within the COM Plan and POD prior to a Notice to Proceed from the agencies. Lattice towers would be assembled at each site, installed and bolted to the foundations. Bundles of steel members and associated hardware would be transported to each tower site by truck. Steel members would be assembled into subsections of convenient size and weight on the ground. Assembly would be facilitated with a small rough-terrain crane. The assembled subsections would be hoisted into place by a large crane and then fastened together to form a complete tower.

Conductor Installation

After the towers are installed, insulators, hardware, and stringing sheaves would be delivered to each tower site. The towers would be rigged with insulator strings and stringing sheaves at each ground wire and conductor position. Sheaves are rollers that are temporarily attached to the lower end of the insulators to allow the conductor to be pulled, or "strung," along the line.

Pilot lines would be pulled (strung) from tower to tower by a helicopter and threaded through the stringing sheaves at each tower. Following pilot lines, a larger-diameter, stronger line (pulling line) would be attached to conductors to pull them onto towers. This process would be repeated until the ground wire or conductor is pulled through all sheaves. Ground wire and conductors would be strung using powered pulling equipment at one end and powered braking or tensioning equipment at the other end of a conductor segment. Sites for tensioning equipment and pulling equipment would be approximately 2.5 miles apart.

The tensioning and pulling sites would be approximately 200 feet by 500 feet. To the greatest extent practical, pulling and tensioning sites would be located within the transmission ROW. However, some pulling and tensioning sites may occur outside the ROW. Depending on topography, some grading may be required at pulling and tensioning sites to create level pads for equipment. Tensioners, line trucks, wire trailers, and tractors needed for stringing and anchoring the ground wire or conductor would be located at the tensioning sites. A puller, line trucks, and tractors needed for pulling and temporarily anchoring the counterpoise/ground wire and conductor would be located at the pulling sites. After installing the conductor and fiber optic shield wire, sagging, clipping and dead-ending activities would be performed. This process would involve adjusting tension of the conductors and shield wires, removing stringing sheaves, and permanently attaching the conductor to the insulators with specialized hardware.

Ground Rod Installation

Part of standard construction practice prior to wire installation would involve measuring the resistance of tower footings. If the resistance to remote earth for each transmission tower is greater than 10 ohms, counterpoise (grounds) would be installed to lower the resistance to 10 ohms or less. Counterpoise would consist of a bare copper-clad or galvanized steel cable buried a minimum of 12 inches deep, extending horizontally from one or more tower legs for approximately 200 feet.

Switching Station Installation

Construction of the new Haskell Canyon Switching Station would consist of preconstruction surveys, clearing and grading of access roads, site grading and drainage development, installation of concrete foundations and steel support structures, installation of below- and above-ground electrical conduits for equipment power and control, installation of below- and above-grade grounding conductors, and installation of control and relay houses. Equipment required for station construction would include graders and excavators, backhoes, drill rigs, concrete trucks, trucks and flatbed trailers. Cranes, man-lifts, portable welding units, line trucks and mechanic trucks would also be required. Construction of the switching station would require an estimated 12 months with approximately 60 workers.

Site preparation work for the station would involve clearing and grading of access roads, clearing of the switchyard site, the cut-and-fill grading of the site, and placement and compaction of structural fill that would serve as a base for switching station facilities. The site would be graded to maintain current drainage patterns as much as possible. An approximately 16 foot wide paved road and 100 foot by 100 foot gravel parking area would be required for worker access and parking. The yard would be covered with crushed-rock aggregate. Native vegetation would be re-established where possible outside the switchyard fence.

Following site grading and development, reinforced concrete foundations would be installed to support the steel structures and electrical equipment and control facilities. It is estimated that approximately 1,500 cubic yards of concrete would need to be delivered to the switching station site for the foundations. Foundation work would require approximately 180 trips to the site by 40-ton, 10-yard capacity concrete trucks over an approximate 60-day working period. Subsequent to the foundation installation, trenches would be dug to facilitate placement of copper conductors for the station grounding mat.

Cleanup

Construction sites, material storage yards, and access roads would be kept in an orderly condition throughout the construction period. Refuse and trash would be removed from the sites and disposed of in an approved manner. Oils and fuels would not be dumped along the line. Oils or chemicals would be hauled to a disposal facility authorized to accept such materials. No open burning of construction trash would occur without agency approval. Microtrash would be cleaned from all work areas within known California condor habitat. *Microtrash* is a term used to describe small bits of debris like bottle caps, rags, screws, bolts, wires, glass, and other refuse materials found in condor habitat.

Hazardous Materials within Corridor

Petroleum products, such as gasoline, diesel fuel, helicopter fuel, crankcase oil, lubricants, and cleaning solvents, would be present within the transmission line corridor during construction. These products would be used to fuel, lubricate, and clean vehicles and equipment. These products would be containerized by fuel trucks or approved containers. When not in use, hazardous materials would be properly stored to prevent drainage or accidents.

Hazardous materials would not be drained onto the ground or into streams or drainage areas. Totally enclosed containment would be provided for all trash. All construction waste, including trash and litter, garbage, other solid waste, petroleum products, and other potentially hazardous materials, would be removed to a disposal facility authorized to accept such materials. All construction, operation, and maintenance activities would comply with all applicable federal, State, and local laws and regulations regarding the use of hazardous substances. The construction or maintenance crew foreman would ensure that all applicable laws are obeyed. In addition, an on-site inspector would be present during construction to make sure that all hazardous materials are used and stored properly. A health and safety plan would be developed as part of the COM Plan and POD during the engineering and preconstruction phase of the Project.

Site Reclamation

The ROW would be restored as required by the property owner or land management agency. All practical means would be used to restore the land to its original contour and to restore natural drainage patterns along the ROW. Because revegetation would be difficult in many areas of the Project where precipitation is minimal, it is important to minimize the area of disturbance during construction. All practical means would be used to increase the chances of vegetation reestablishment in disturbed areas. The total construction period would be approximately two years. The COM Plan, which would be completed during the engineering and preconstruction phase of the Project, would address specific site reclamation of all disturbed areas.

Fire Protection

A Fire Management Plan would be developed for the Project, and all applicable fire laws and regulations would be observed during the construction period. All personnel would be advised of their responsibilities under the applicable fire laws and regulations, including taking practical measures to report and suppress fires.

Construction Monitoring

An approved compliance program would be developed to address mitigation requirements associated with the avoidance of sensitive plant and animal species, cultural sites, or other sensitive features located within or adjacent to the Project. Resource protection measures proposed by LADWP for this Project are described in the Section 4.5. These measures will be included in the POD.

1.1.3 Operation and Maintenance Activities

The nominal voltage for the BRRTP transmission line would be 230 kV AC. There may be minor variations of up to five percent above the nominal level depending upon load flow. Regular inspection and maintenance of overhead facilities is crucial for maintaining uniform, adequate, safe and reliable service. The 230 kV transmission line would be inspected five times annually, by two air patrols and three ground patrols. Maintenance would be performed as needed. When access would be required for non-emergency maintenance and repairs, LADWP would adhere to the same precautions and procedures that were taken during the original construction.

Emergency maintenance would involve prompt movement of repair crews to repair or replace any damaged equipment or infrastructures. Crews would be instructed to protect crops, plants, wildlife, and other resources of significance. Restoration procedures following completion of repair work would be similar to those prescribed for normal construction. The comfort and safety of local residents would be provided for by limiting noise, dust, and the danger caused by maintenance vehicle traffic. Details would be provided in the COM Plan and POD.

Vegetation Management

Vegetation management along the transmission line ROW is required by the North American Electrical Reliability Council (NERC), and regular inspection and maintenance of overhead transmission lines is crucial for maintaining uniform, adequate, safe and reliable service. In compliance with the NERC's Standard FAC-003-I, LADWP will prepare a Vegetation Management Plan for the BRRTP. Vegetation management would consist of routine tree trimming to maintain the required minimum ten-foot clearance from conductors to vegetation (California Public Resources Code (PRC) 4293)); clearing flammable brush vegetation within a ten-foot radius around the base of transmission line towers in accordance with California PRC 4292; and clearing brush and trees adjacent to off-highway vehicle trails and access roads to permit adequate access to the facilities.

Access Road Maintenance

Access road maintenance consists of those activities necessary to allow continued access to the ROW and/or each tower structure. These activities may include grading, and maintenance of drainage systems, bridges, culverts, fences, gates and signs. Motor graders, backhoes, dump trucks and pickups are used to maintain access roads.

Permitted Uses

After the transmission line has been energized, land uses that are compatible with safety regulations (such as agriculture and grazing) would be permitted in and adjacent to the ROW. Incompatible land uses within the ROW include construction and maintenance of inhabited dwellings, and any use requiring changes in surface elevation that would affect electrical clearances of existing or planned facilities. Land uses on public lands that comply with local regulations would be permitted adjacent to the ROW, but would require approval from the appropriate agency. Permission to use the ROW on private lands would have to be obtained by LADWP.

Safety

Safety is a primary concern in the design of the 230 kV transmission line. The AC transmission line would be protected with power circuit breakers and related line relay protection equipment. If conductor failure occurs, power would be automatically removed from the line. Lightning protection would be provided by overhead ground wires along the line. Electrical equipment and fencing at the substation would be grounded. All fences, metal gates, pipelines, and other metal components that cross or are within the transmission line ROW would be grounded to prevent electrical shock. If applicable, grounding outside of the ROW may also occur.

Abandonment

At the end of the useful life of the proposed Project, if the facility were no longer required, the transmission line would be abandoned. Subsequently, conductors, insulators, and hardware would be dismantled and removed from the ROW. Tower structures would be removed and foundations broken off below ground surface.

If the line and associated ROW are abandoned at some future date, the ROW would be available for the same uses that existed prior to construction of the Project. Following abandonment and removal of the transmission line from the ROW, any areas disturbed to dismantle the line would be restored and rehabilitated to the extent possible.

1.2 GENERAL PRACTICES AND MITIGATION MEASURES

The following tables describe some of the proposed General Practices (GPs) and mitigation measures to reduce the spread of noxious weeds or protect native vegetation during the construction of the BR RTP. These were written by LADWP and apply to preconstruction, construction, and post-construction aspects of the Project. The GPs are considered to be part of the Project description for any Alternative that is chosen. The GPs were written for all resources of the Project. Because not all of these are applicable to biology or to vegetation management, ones that do not apply to biology or vegetation have been removed and show "not applicable" in the table below. The entire list can be viewed in the BR RTP Draft Environmental Impact Statement/Environmental Impact Report (DEIS/EIR) (USFS, BLM, and LADWP 2011).

TABLE 3. GENERAL PRACTICES

Plans	
GP-1	Plan of Development & Construction, Operation and Maintenance Plans. In consultation with the Forest Service and BLM Authorizing Officers prior to construction, LADWP shall develop a Construction, Operation and Maintenance Plan (COM Plan) with the Forest Service and Plan of Development (POD) with BLM. These plans shall be attached to and become a part of the Special Use and Right-of-Way Authorizations. The COM Plan and POD shall include, at a minimum, road maintenance specifications, vegetation treatment and rehabilitation specifications, and conditions on maintenance and replacement of improvements. The agencies may combine the POD and COM plans into a single document for the Project.
GP-2	<i>Not applicable</i>
GP-3	<i>Not applicable</i>
GP-4	<i>Not applicable</i>
GP-5	<i>Not applicable</i>
GP-6	<i>Not applicable</i>
GP-7	<i>Not applicable</i>
GP-8	<i>Not applicable</i>
GP-9	<i>Not applicable</i>
GP-10	<i>Not applicable</i>

GP-11	<i>Not applicable</i>
GP-12	<i>Not applicable</i>
Construction Vehicles/Equipment	
GP-13	<i>Not applicable</i>
GP-14	<i>Not applicable</i>
GP-15	<i>Not applicable</i>
GP-16	<i>Not applicable</i>
GP-17	<i>Not applicable</i>
GP-18	<i>Not applicable</i>
GP-19	<i>Not applicable</i>
GP-20	<i>Not applicable</i>
GP-21	<i>Not applicable</i>
GP-22	<i>Not applicable</i>
Access Roads	
GP-23	<i>Not applicable</i>
GP-24	To the extent practical, any re-grading of access roads shall be the minimum necessary to provide safe access of construction equipment, and erosion control measures.
GP-25	Construction vehicles shall use paved roads to access the construction site when available.
GP-26	<i>Not applicable</i>
GP-27	<i>Not applicable</i>
GP-28	<i>Not applicable</i>
GP-29	<i>Not applicable</i>
GP-30	<i>Not applicable</i>
GP-31	<i>Not applicable</i>
GP-32	<i>Not applicable</i>
GP-33	In areas where soils and vegetation are particularly sensitive to disturbance, existing access roads would be repaired only in areas where they are otherwise impassable or unsafe.
Construction Areas	
GP-34	<i>Not applicable</i>
GP-35	Grading areas shall be clearly marked and no equipment or vehicles shall disturb slopes or drainages outside of the grading area.
GP-36	<i>Not applicable</i>
GP-37	In construction areas (e.g., marshalling yards, tower sites, spur roads from existing access roads) where ground disturbance is significant or where recontouring is required, surface restoration shall occur as required by the landowner or land management agency. The method of restoration will normally consist of returning disturbed areas back to their natural contour, reseeding, installing cross drains for erosion control as necessary, placing water bars in the road as necessary, and filling ditches.
GP-38	<i>Not applicable</i>
GP-39	<i>Not applicable</i>
GP-40	<i>Not applicable</i>
GP-41	Allow natural vegetation to reoccur on temporarily disturbed areas following the completion of construction.
GP-42	Weed control measures on non-federal lands shall be implemented as determined in consultation with CDFG and the Counties of Los Angeles and Kern Agricultural Commissions.
GP-43	Every effort will be made to minimize vegetation removal and permanent loss at construction sites. Native vegetation will be flagged for protection or stockpiled for recontouring use at the discretion of the Biological Monitor and the Construction Supervisor.
GP-44	In construction areas where recontouring is not required, vegetation will be left in place wherever possible and the original contour will be maintained to avoid excessive root damage and allow for resprouting. Disturbance will be limited to overland driving where feasible to minimize changes in the original contours.
GP-45	<i>Not applicable</i>
GP-46	<i>Not applicable</i>
GP-47	<i>Not applicable</i>

Surveys/Monitoring	
GP-48	Biological Monitor. For areas identified as environmentally sensitive, such as streams, wetlands, riparian areas, and other environmentally sensitive areas, a biological monitor shall be present during ground disturbing construction activities. The qualified biologist shall conduct monitoring for any area subject to disturbance from construction activities that may impact biological resources. The biological monitor's duties include minimizing impacts to special-status species, native vegetation, wildlife habitat, and unique resources, as well as to identify potential issues or impacts to biological resources and report those to the authorized biologist. Where appropriate, the monitor will flag the boundaries of biologically sensitive areas and monitor any construction activities in these areas to ensure that ground disturbance activities and impacts occur within designated limits.
GP-49	Worker Environmental Awareness Program. A Worker Environmental Awareness Program (WEAP) will be implemented to educate all construction personnel of the area's environmental conditions and the environmental protection measures that must be adhered to. An environmental training program will be established to communicate environmental concerns and appropriate work practices, including spill prevention, emergency response measures, protection of biological and cultural resources, and proper Best Management Practice (BMP) implementation, to all construction and maintenance personnel.
Coordination/Permits	
GP-50	<i>Not applicable</i>
GP-51	<i>Not applicable</i>
GP-52	<i>Not applicable</i>
GP-53	<i>Not applicable</i>
GP-54	<i>Not applicable</i>
GP-55	<i>Not applicable</i>
GP-56	<i>Not applicable</i>
GP-57	<i>Not applicable</i>
GP-58	<i>Not applicable</i>
GP-59	<i>Not applicable</i>

TABLE 4. PROPOSED BRRTP MITIGATION MEASURES

<p>BIO-1</p>	<p><i>Provide restoration/compensation for impacted sensitive vegetation communities.</i></p> <p>1a. The intent of this mitigation measure is to require LADWP to restore disturbed sites to pre-construction conditions or the desired future conditions per the Angeles National Forest (ANF) Land Management Plan (LMP). Before construction LADWP shall have a qualified biologist, where concurrence on the biologist has been provided by the USFS and BLM, document the community type and acreage of vegetation that would be subject to Project disturbance. Impacts to all oaks and native trees will be documented by identifying the species, number, location, and diameter at breast height (DBH). On non-federal lands, all protection and replacement measures shall be consistent with applicable local jurisdiction requirements, such as the Los Angeles County Oak Tree Ordinance. Tree removal shall not be permitted until replacement trees have been planted or transplanting sites are approved.</p> <ol style="list-style-type: none"> 1) For NFS and BLM lands, the USFS and BLM shall prepare a Habitat Restoration and Revegetation Plan, in discussion with LADWP, for the Project, which shall include plans for restoration, enhancement/re-vegetation and/or mitigation banking. For non-federal lands, LADWP shall prepare the Habitat Restoration and Revegetation Plan. Both plans shall include at minimum: (a) the location of the mitigation site (off-site mitigation may be required); (b) locations and details for topsoil storage; (c) the plant species to be used; (d) seed and cutting collecting guidelines; (d) a schematic depicting the mitigation area; (e) time of year that the planting will occur and the methodology of the planting; (f) a description of the irrigation methodology for container, bare-root or other planting needing irrigation; (g) measures to control exotic vegetation on site; (h) success criteria; (i) a detailed monitoring program; (j) locations and impacts to all oaks and native trees (over 3 inches DBH); (k) locations of temporary or permanent gates, barricades, law enforcement patrolling, or other means to control unauthorized vehicle access on access and spur roads as deemed necessary by the USFS and BLM (NFS and BLM lands only). 2) LADWP shall utilize a USFS/BLM approved locally collected seed mix, locally collected cuttings, bare-root stock, etc. to revegetate areas disturbed by construction activities. All habitats dominated by non-native species before Project disturbance shall be revegetated using appropriate native species. USFS/BLM approval is required for seeding on NFS/BLM land. The seed mix shall consist of native, locally occurring species collected from local seed sources. Cuttings and bare-root stock shall be of local origin. Restoration shall include the revegetation of stripped or exposed work sites and/or areas to be mitigated with vegetation native to the area. No commercially purchased seeds, stock, etc. will be accepted without the approval of the USFS and BLM on NFS/BLM lands, and seeds must be certified to be free of noxious weeds. Revegetation shall include ground cover, grass, shrub, and tree species to match disturbed areas to surrounding conditions and to restore or improve wildlife habitat quality to pre-Project or higher levels. The Habitat Restoration and Revegetation Plan shall also include a monitoring element. Post seeding and planting monitoring reporting will be yearly from years one to five and every other year from years six to ten or until the success criteria are met. LADWP shall restore temporarily disturbed areas, including existing tower locations that are to be removed by the Project, to pre-construction conditions or the desired future conditions per the ANF LMP. If the survival and cover requirements have not been met, LADWP is responsible for replacement planting to achieve these requirements. Replacement plants shall be monitored with the same survival and growth requirements as previously mentioned. 3) On NFS land, the USFS/LADWP will conduct a preconstruction evaluation of the probable impacts to all oaks and native trees in all construction-related disturbance areas. This evaluation shall be incorporated into the Habitat Restoration Plan and shall include the species and number of individuals, their DBH, location, and potential impact type. Construction within the driplines of all native trees and oak trees/shrubs, and incidental trimming or damage to trees along the proposed access/spur routes, shall not occur until the trees are evaluated by a USFS botanist or qualified arborist. This person shall identify appropriate measures to minimize tree loss, such as the placement of fence around the dripline, padding vehicles, minimizing soil removal or adding spoil around driplines, and the placement of matting under the existing dripline during construction activities. On the ANF, if a tree must have any construction-related activities such as equipment or soil staging within the drip zone, root pruning, or excessive branch pruning (greater than 25% in one year), then the tree must be monitored for five years for tree mortality. If any of these identified trees dies during the monitoring period, then the tree must be replaced at the rate
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	<p>appropriate to the DBH.</p> <p>4) The replacement ratios (using rooted plants in liners or direct planting of acorns [for oaks]) for native trees or any oaks that are to be removed on the ANF shall be as follows: trees from 1 to 5 inches DBH shall be replaced at 3:1; trees from 5 to 12 inches shall be replaced at 5:1; trees from 12 to 24 inches shall be replaced at 10:1; trees from 24 to 36 inches shall be replaced at 15:1; and all oaks greater than 36 inches shall be replanted at a ratio of 20:1. The replacement ratio for damaged trees shall be 2:1 for trees with DBH less than 12 inches and a 5:1 ratio for trees with DBH greater than 12 inches. The DBHs for scrub oaks will be measured following California Department of Fish and Game (CDFG) guidelines. On the ANF, any oak or native tree that must be removed or killed as a result of construction or other Project-related activities shall be replaced in kind or mitigated (off-site) at a comparable value. Compliance shall be evaluated annually for years one to five and bi-annually for years six to ten (years after tree planting). Trees shall be planted at locations acceptable to the landowner or managing agency. All planting locations, procedures, and results shall be evaluated by a qualified arborist and USFS botanist. On non-federal lands, all protection and replacement measures shall be consistent with applicable local jurisdiction requirements, such as the Los Angeles County Oak Tree Ordinance.</p> <p>5) Permanent impacts on federal lands shall be determined by the appropriate federal manager (USFS and BLM) at the ratios stated below (Table BIO-MM-1) or at a comparable value. On NFS and BLM lands, impacts will be considered permanent if the trees are not likely to recover by ten years post-disturbance. Where on-site restoration is planned for mitigation of temporary impacts to vegetation communities, LADWP shall identify a Habitat Restoration Specialist, where concurrence has been provided by the USFS, to implement the method of restoration outlined by the USFS/BLM in the Habitat Restoration Plan.</p> <p>6) On USFS/BLM lands, the creation or restoration of habitat shall be monitored after mitigation site construction to assess progress and identify potential problems with the restoration site. This will be monitored on USFS/BLM lands until the success criteria are met or annually for years one to five, and bi-annually for years six to ten. Remediation activities (e.g., additional planting, removal of non-native invasive species, or erosion control) shall be taken during the ten-year period if necessary to ensure the success of the restoration effort. If the mitigation fails to meet the established performance criteria after the ten-year maintenance and monitoring period, monitoring and remedial activities shall extend beyond the ten-year period until the criteria are met or unless otherwise specified by the USFS/BLM (as appropriate). If a fire occurs in a revegetation area within the ten-year monitoring period, LADWP shall be responsible for a one-time replacement. If a second fire occurs, no replanting is required, unless the fire is caused by LADWP activity. Off-site mitigation for NFS/BLM and non-NFS/BLM lands may be required if mitigation rates exceed what can be achieved on NFS/BLM land. This may be in the form of funding for land purchase for inclusion into the Angeles National Forest, mitigation banking, removing existing structures, or comparable restoration efforts.</p> <p>1b. During and after construction, USFS/BLM-identified potential or existing entrances to Project-related disturbed areas such as access/spur roads, pull sites, staging areas, fly yards, landing zones, etc. on NFS/BLM lands shall be gated, blockaded and/or concealed in some manner and maintained to prevent the unauthorized use by the general public. Signs prohibiting unauthorized use of these disturbance areas shall be posted on these barricades if deemed necessary by the USFS/BLM. If barricades are being compromised, law enforcement patrolling may also be implemented to control unauthorized access onto Project disturbance areas.</p> <p>1c. Treat cut tree stumps with Sporax. All stumps of trees (conifers and hardwoods) resulting from activities associated with construction of the Project shall be treated with Sporax according to product directions to prevent the spread of annosus root disease. Only licensed applicators shall apply Sporax. Sporax shall not be used during rain events unless otherwise approved by the USFS.</p>
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TABLE BIO-MM-1. SUMMARY OF ESTIMATED IMPACTS TO VEGETATION COMMUNITIES ON FEDERAL LANDS

Vegetation Communities	Jurisdiction	Permanent Impact (acres)			Temporary Impact (acres)			Total Estimated Mitigation (acres)
		Estimated Impact	Ratio	Estimated Off-site Mitigation	Estimated Impact	Ratio	Estimated On-site Restoration	

Vegetation Communities	Jurisdiction	Permanent Impacts (acres)			Temporary Impacts (acres)			Total Estimated Mitigation (acres)
		Estimated Impact	Ratio	Estimated Off-site Mitigation	Estimated Impact	Ratio	Estimated On-site Restoration	
Alternative 1								
Chamise Chaparral	USFS	16.73	3:1	50.19	56.06	1:1	56.06	106.25
Mojave Creosote Bush Scrub	BLM	2.68	1:1	2.68	21.81	1:1	21.81	24.49
Mojave Wash Scrub	BLM	0.25	1:1	0.25	2.05	1:1	2.05	2.30
Riversidian Sage Scrub	USFS	3.06	5:1	15.3	10.48	2:1	20.96	36.26
Southern Coast Live Oak Riparian Forest	USFS	0.05	5:1	0.25	0.38	2:1	0.76	1.01
Southern Cottonwood Willow Riparian Forest	USFS	0.42	5:1	2.1	0.86	2:1	1.72	3.82
Southern Mixed Chaparral	USFS	14.13	3:1	42.39	45.81	1:1	45.81	88.20
Southern Sycamore Alder Riparian Woodland	USFS	0.13	5:1	0.65	0.25	2:1	0.5	1.15
Southern Willow Scrub	USFS	0.32	3:1	0.96	1.30	2:1	2.6	3.56
Alternative 2								
Chamise Chaparral	USFS	10.11	3:1	30.33	39.38	1:1	39.38	69.71
Disturbed/developed	USFS	7.8	1:1	7.8	24.8	1:1	24.8	32.6
Mojave Creosote Bush Scrub	BLM	2.69	1:1	2.69	21.82	1:1	21.82	24.51
Mojave Wash Scrub	BLM	0.25	1:1	0.25	2.06	1:1	2.06	2.31
Riversidian Sage Scrub	USFS	1.84	5:1	9.2	8.85	2:1	17.7	26.9
Southern Coast Live Oak Riparian Forest	USFS	0.69	5:1	3.45	3.39	2:1	6.78	10.23
Southern Mixed Chaparral	USFS	3.24	3:1	9.72	8.77	1:1	8.77	18.49
Southern Riparian Scrub	USFS	0.33	3:1	0.99	0.66	1:1	0.66	1.65
Southern Sycamore Alder Riparian Woodland	USFS	0.87	5:1	4.35	2.2	2:1	4.4	8.75
Alternative 2a								
Chamise Chaparral	USFS	10.11	3:1	30.33	39.38	1:1	39.38	69.71
Disturbed/developed	USFS	3.24	1:1	3.24	12.72	1:1	12.72	15.96
Interior Live Oak Chaparral	USFS	2.06	5:1	10.3	5.60	2:1	11.2	21.5
Mojave Creosote Bush Scrub	BLM	2.68	1:1	2.68	21.81	1:1	21.81	24.49
Mojave Wash Scrub	BLM	0.25	1:1	0.25	2.05	1:1	2.05	2.3
Riversidian Sage Scrub	USFS	1.84	5:1	9.2	8.85	2:1	17.7	26.9
Scrub Oak Chaparral	USFS	1.46	5:1	7.3	3.19	2:1	6.38	13.68
Southern Coast Live Oak Riparian Forest	USFS	0.69	5:1	3.45	3.40	2:1	6.8	10.25
Southern Mixed Chaparral	USFS	9.03	3:1	27.09	27.88	1:1	27.88	54.97
Southern Riparian Scrub	USFS	0.33	5:1	1.65	0.66	2:1	1.32	2.97
Southern Sycamore Alder Riparian Woodland	USFS	0.81	5:1	4.05	1.64	2:1	3.28	7.33
Alternative 3								
Chamise Chaparral	BLM	0.00	1:1	0.0	0.02	1:1	0.02	0.02
Disturbed/developed	USFS	1.04	1:1	1.04	2.13	1:1	2.13	3.17
Mojave Creosote Bush Scrub	BLM	2.68	1:1	2.68	21.81	1:1	21.81	24.49
Mojave Wash Scrub	BLM	0.25	1:1	0.25	2.05	1:1	2.05	2.3
Riversidian Sage Scrub	USFS	9.57	5:1	47.85	28.19	2:1	56.38	104.23
Scrub Oak Chaparral	USFS	2.87	5:1	14.35	5.83	2:1	11.66	26.01
Southern Riparian Scrub	USFS	0.34	5:1	1.7	0.69	2:1	1.38	3.08
New Circuit								
Chamise Chaparral	USFS	8.03	3:1	24.09	23.05	1:1	23.05	47.14
Riversidian Sage Scrub	BLM	0.04	1:1	0.04	0.34	1:1	0.34	0.38
Riversidian Sage Scrub	USFS	1.98	5:1	9.9	5.96	2:1	11.92	21.82
Southern Coast Live Oak Riparian Forest	USFS	0.08	5:1	0.4	0.66	2:1	1.32	1.72

Vegetation Communities	Jurisdiction	Permanent Impact (acres)			Temporary Impact (acres)			Total Estimated Mitigation (acres)
		Estimated Impact	Ratio	Estimated Off-site Mitigation	Estimated Impact	Ratio	Estimated On-site Restoration	
Southern Cottonwood Willow Riparian Forest	USFS	0.40	5:1	2.0	0.80	2:1	1.6	3.6
Southern Sycamore Alder Riparian Woodland	USFS	0.09	5:1	0.45	0.19	2:1	0.38	0.83
Reconductoring								
Chamise Chaparral (Segment ABG)	USFS	16.07	3:1	48.21	32.65	1:1	32.65	80.86
Disturbed/developed (Segment ABG)	USFS	7.77	1:1	7.77	25.28	1:1	25.28	33.05
Mojave Creosote Bush Scrub (Segment ABG)	BLM	2.85	1:1	2.85	23.16	1:1	23.16	26.01
Mojave Wash Scrub (Segment ABG)	BLM	0.23	1:1	0.23	1.86	1:1	1.86	2.09
Riversidian Sage Scrub (Segment ABG)	USFS	5.07	5:1	25.35	10.30	2:1	20.6	45.95
Southern Coast Live Oak Riparian Forest (Segment ABG)	USFS	3.25	5:1	16.25	6.60	2:1	13.2	29.45
Southern Mixed Chaparral (Segment ABG)	USFS	2.86	3:1	8.58	8.01	1:1	8.01	16.59
Southern Riparian Scrub (Segment ABG)	USFS	0.33	5:1	1.65	0.66	2:1	1.32	2.97
Southern Sycamore Alder Riparian Woodland (Segment ABG)	USFS	0.95	5:1	4.75	2.34	2:1	4.68	9.43
Southern Coast Live Oak Riparian Forest (Segment K)	BLM	0.02	1:1	0.02	0.04	1:1	0.04	0.06
Southern Mixed Chaparral (Segment K)	BLM	0.00	1:1	0.0	0.01	1:1	0.01	0.01

Note: The permanent and temporary impact calculations provided above are estimates based on the impact model described in Appendix C of the Biological Resources Technical Report. Therefore, acreage numbers for the habitat types listed above may be smaller than those listed in the table. Preconstruction surveys will be conducted to estimate the acreage impacts and will be based on the final design not the impact model.

Mitigation Measure	Description
BIO-2	<p><i>The following prescriptions would prevent the spread of invasive weeds into previously uninfested areas in the designated construction right-of-way.</i></p> <p>2a Prepare and implement a Weed Control Plan. LADWP/ANF/BLM shall prepare and implement a comprehensive, adaptive Weed Control Plan on NFS/BLM lands for pre-construction and construction invasive weed abatement. The long-term Weed Control Plan, including monitoring and eradication, will be defined as part of the 50 year Operations and Maintenance Permit. On the ROW easement lands administered by the USFS/BLM, the Weed Control Plan shall incorporate all appropriate and legal agency-stipulated regulations. The Weed Control Plan shall be submitted to the USFS/BLM for final authorization of weed control methods, practices, and timing before implementation of the Weed Control Plan on public lands. Weed control on BLM lands using pesticides will require an approved BLM Pesticide Use Permit. Pesticide Use Permits are issued for a maximum of three years. ROW easements on private lands shall include adaptive provisions such as wheel and equipment washing for the implementation of the Weed Control Plan. The Weed Control Plan shall include the following:</p> <ol style="list-style-type: none"> 1) A pre-construction weed inventory shall be conducted on NFS and BLM lands by surveying all areas subject to ground-disturbing activity, including, but not limited to, tower pad preparation and construction areas, tower removal sites, pulling and tensioning sites, assembly yards, and areas subject to grading for new or improved access and spur roads. Weed populations that: (1) are rated High or Moderate for negative ecological impact in the California Invasive Plant Inventory Database (Cal-IPC 2006); (2) aid and promote the spread of wildfires (such as cheatgrass, Saharan mustard, and medusa head); and (3) are considered by the USFS and/or BLM as

species of priority (for NFS/BLM lands only) shall be mapped and described according to density and area covered. In areas subject to ground disturbance, weed infestations shall be treated before construction according to control methods and practices for invasive weed populations designed in consultation with the USFS/BLM. The Weed Control Plan shall be updated and utilized for eradication and monitoring post-construction.

- 2) Weed control treatments shall include all legally permitted herbicide, manual, and mechanical methods applied with the authorization of the USFS/BLM. The application of herbicides shall be in compliance with all State and federal laws and regulations under the prescription of a Pest Control Advisor (PCA), where concurrence has been provided by the USFS/BLM, and implemented by a Licensed Qualified Applicator, if the herbicide is in the restricted use category. The most effective herbicides with the least toxic surfactant available shall be used. Herbicides shall not be applied during or within 24 hours of a 70% chance of occurring rain event. Herbicides shall not be used within Riparian Conservation Areas (RCAs) on the ANF without approval of the USFS. In riparian areas, only water-safe herbicides, surfactants and adjuvants shall be used. Herbicides shall not be applied by spray equipment when wind velocities exceed 6 mph. Herbicides applied by sponge or paintbrush to cut stumps shall not be applied at over 15 mph. In areas containing special-status plants or animals, there will be a 5- to 70-foot buffer where herbicides are not used. The size of the buffer will be determined and flagged for avoidance by an approved botanist/biologist, based on phenology or life cycle at time of treatment, rareness and imperilment of species, vulnerability of herbicide being used, concentration of herbicide used based on no observed effect concentrations and/or environmental conditions and terrain. Where manual and/or mechanical methods are used, disposal of the plant debris will follow the regulations set by the USFS/BLM. The timing of the weed control treatment shall be determined for each plant species in consultation with the USFS/BLM (on NFS/BLM lands) with the goal of controlling populations before they start producing seeds. Pre-emergent herbicides will only be used in areas that have a very low potential for supporting native plant species after disturbance, as determined by an agency botanist.

For the preconstruction and construction of the Project, measures to control the introduction and spread of noxious weeds in the Project work area shall be taken as follows.

- 3) On the ANF and BLM lands, surveying for new invasive weed populations and the monitoring of identified and treated populations shall be required at all sites impacted by construction (tower pads, staging areas, landing zones, etc.), including access/spur roads disturbed during the Project. Surveying and monitoring for weed infestations shall occur annually for years one to five and bi-annually for years six to ten, or until success criteria are met. Treatment of all identified weed populations shall occur at an appropriate interval so as to meet the success criteria. When no new seedlings or resprouts are observed at treated sites for three consecutive, normal rainfall years, the weed population can be considered eradicated and weed control efforts may cease for that impact site.
- 4) During Project preconstruction and construction, all seeds and straw materials shall be weed-free rice straw, and all gravel and fill material shall be certified weed-free by the county Agriculture Commissioners' Offices. Any deviation from this must be approved by a USFS/BLM botanist. All plant materials used during restoration shall be native, certified weed-free, and approved by the USFS/BLM.
- 5) Before beginning preconstruction activities, the USFS, in coordination with LADWP, will determine suitable locations to install field washing stations as part of the Weed Control Plan. Before commencing construction activities, LADWP shall document that all vehicles, equipment, and tools used on the Project have been cleaned at existing construction yards or legally operating car washes. This is a one-time requirement designed to address the potential of new species of weeds being transported from outside the area. If, however, vehicles, equipment, or tools are used or driven off paved roads on non-NFS lands, washing must occur before entering USFS lands.

During Project preconstruction and construction, all vehicles, equipment, or tools which will be used outside of permitted Project roadways shall be washed at the nearest station before operating off-road. In other areas also designated by the USFS, vehicles, equipment, and tools will be washed at the nearest station after exiting those areas. Vehicles that do not leave permitted Project roadways are not required to be washed after the initial washing described

	<p>above. All washing shall take place where rinse water is collected and disposed of in either a sanitary sewer or landfill, unless otherwise approved by the USFS.</p> <p>Written daily logs shall be kept for all vehicle/equipment/tool washing that states the date, time, location, type of equipment washed, methods used, and staff present. The log shall include the signature of a responsible staff member. Logs shall be available to the USFS for inspection at any time and shall be submitted to the USFS permit administrator on a monthly basis.</p> <p>6) During Project operation and maintenance activities, weeds shall be cleared and disposed of in assembly yards, helicopter landing areas, tower pads, spur roads, staging areas, and any other disturbance areas in a USFS/BLM-approved method.</p> <p>2b Remove weed seed sources from construction access routes. Before construction, LADWP shall initiate invasive species eradication. Populations to be treated will be small to moderate and isolated, but have the potential to spread aggressively during construction. Post-construction, these isolated populations will be included and treated according to the restoration plan. Per the Forest Service Manual (FSM) 2080 Best Management Practice (BMP) guideline, LADWP shall also remove or reduce sources of weed seed along the travel routes associated with Project construction. Weed species identified along the Alternatives and associated access roads include localote, artichoke thistle, tree tobacco, saltcedar, slender wild oat/wild oat, ripgut brome, soft chess brome, red brome, cheatgrass, blessed thistle, filaree, shortpod mustard, prickly lettuce, common horehound, yellow sweetclover, rabbit foot grass, Mediterranean grass, sowthistle, rat-tail fescue, tree-of-heaven, giant reed grass, yellow starthistle, bull thistle, fennel, perennial pepperweed, and black locust. To prevent the introduction or control the spread of noxious weeds, hand removal or other control methods will be implemented to reduce seed production during Project construction. Following Project approval and during the time of year when weed species can be observed and identified, LADWP shall identify, using a qualified plant ecologist, any other weed seed sources that could contribute to Project-related weed spread on the ANF and BLM lands. Target infestations identified by Project surveys should be controlled before construction. LADWP shall initiate eradication of the target infestations discovered during pre-construction surveys along construction routes.</p> <p>2c Remove weed seed sources from assembly yards, staging areas, tower pads, pull sites, landing zones, and spur roads. Before construction and during each year of use for construction at all assembly yards, staging areas, tower pads, pull sites, landing zones, and spur roads within the ANF and BLM lands, weed-infested areas should be hand-weeded and/or treated as appropriate for the individual weed species under the guidance of a qualified plant ecologist or restoration ecologist, where concurrence on the ecologist has been provided by the USFS/BLM. Unless otherwise authorized by the USFS/BLM, weed control efforts in these areas shall be timed annually to reduce shortpod mustard, localote, bromes and other noxious weed seed production, by hand-removing or weed-whacking infestations when flowering has just started, but before seeds have been produced. All plant debris shall be disposed of at a USFS/BLM approved location. Weed control efforts shall commence in early spring (February – March), as indicated annually by a qualified plant ecologist or restoration ecologist in coordination with LADWP and USFS/BLM botanist or weed specialist.</p> <p>2d Use of Herbicides to Control Exotic Weeds. LADWP may use herbicides where deemed necessary for the control of exotic weeds within the Project area. Weed control should be species-specific, and herbicides should be applied only if necessary after considering alternate methods or as part of a proven eradication strategy for that weed species. To minimize potential impacts, weed control treatments shall include all legally permitted herbicide, manual, and mechanical methods applied with the authorization of the USFS. Due to typically large seed banks and the ability of some weed species to vigorously resprout following removal methods, most species require more than one round of treatment, or require a different follow-up treatment method after the initial removal occurs. Any herbicide use on NFS lands would be subject to the review and approval of the appropriate USFS personnel and in coordination with LADWP.</p>
BIO-3	<p><i>Incorporate riparian area avoidance and permit measures.</i></p> <p>The following actions and all permit conditions detailed within the Nationwide 12 permit and RWQCB 401 water quality certification (subject to separate approval) would be implemented by the construction manager and environmental compliance monitor(s).</p> <p>3a LADWP shall not construct or modify any structure, culvert, or bridge or modify any habitat on NFS lands in RCAs without the authorization of the USFS. Vegetation removal or road construction shall not</p>

	<p>occur in RCAs during the breeding season for nesting birds (February 1 to August 15) unless otherwise approved by the USFS. LADWP shall prepare and implement a USFS RCA Treatment Plan for the Project. This Plan shall include the specific activities that will occur at each of the RCA points crossed by the Project, including the amount and type of vegetation to be cleared, the type of road crossing or improvement allowed for wet and dry crossings, and the methods that would be employed to reduce the effects of the Project on water quality. The Plan shall include seasonal restrictions for vehicle or equipment passage, restrictions on what activities may occur (such as grading, vegetation removal or tree trimming), monitoring requirements, and restoration requirements. This Plan shall be submitted to the USFS for approval before construction or the grading of any access road.</p> <p>3b Before construction, qualified resource specialists shall stake and flag or fence exclusion zones around all identified riparian areas. Such exclusion zones will include a 10-foot buffer to preclude sediment intrusion into the riparian areas. Earth-moving activities shall be restricted from these zones, although essential vehicle operation and foot travel will be permitted on existing roads, bridges, and crossings. All other construction activities, vehicle operation, material and equipment storage, and other surface-disturbing activities will be prohibited within the exclusion zone.</p> <p>3c In areas where riparian habitats are unavoidable, the construction manager, in consultation with the lead environmental compliance inspector and USFS, shall narrow the width of the road through the area to the minimum extent required for safe travel. New spur roads and existing access road improvements shall be constructed and implemented using methodology that preserves existing hydrology.</p> <p>3d Towers shall not be constructed in riparian areas.</p> <p>3e All temporarily disturbed riparian areas that would not be utilized for future routine operation and maintenance activities shall be restored according to the guidelines of the Habitat Restoration Plan to the extent required to ensure no net loss of habitat functions and values. Following construction activities, the areas will be restored as soon as practicable.</p> <p>3f Permanent, unavoidable losses of riparian areas will be mitigated by restoration and/or preservation of off-site habitats, as outlined in the Habitat Restoration Plan. The final mitigation and off-site restoration locations will be determined in consultation with LADWP and the responsible agency(s). Mitigation acreage ratios will be consistent with those listed in Table BIO-MM-1.</p>
BIO-4	<p><i>Provide restoration/compensation for affected jurisdictional areas.</i></p> <p>4a Impacts to areas under jurisdiction of the USACE, RWQCB, USFS and CDFG shall be avoided to the extent feasible. Where avoidance of jurisdictional areas is not feasible, including emergency repairs, and access/spur roads within RCAs, the applicant shall provide the necessary mitigation required as part of wetland permitting. This will include creation, restoration, and/or preservation of suitable jurisdictional habitat along with adequate buffers to protect the function and values of jurisdictional area mitigation. The location(s) of the mitigation will be determined in consultation with LADWP and the responsible agency(s) as part of the wetland permitting process.</p> <p>4b Measures 3a, b, c, and d will also be incorporated to avoid and protect jurisdictional areas.</p>
BIO-5	Wildlife Measure
BIO-6	<p><i>Implement a Worker Environmental Awareness Program.</i></p> <p>A qualified biologist(s) shall conduct a detailed biological Worker Environmental Awareness Program (WEAP) for all Project personnel before any construction or activities within the Project footprint. The WEAP shall include discussions of Project permits and brief summaries of their conditions; discussions of agency involvement, their applicable sensitivity measures, and relevant environmental protection legislation (e.g., the Endangered Species Act, the Migratory Bird Treaty Act); descriptions of special-status species and other sensitive resources that could exist in the Project area, along with their locations, legal status and protections; and a review of all measures to be implemented for avoidance of these sensitive resources. The final list of wildlife species to be included in the WEAP may be reduced at the discretion of the biologist with concurrence from applicable agencies. BIO-6 is in addition to LADWP's General Practice (GP) 69 WEAP, which does not provide the level of biological detail this mitigation measure provides.</p> <p>6a. Training materials and briefings shall also include the consequences of non-compliance with these acts; identification and values of plant and wildlife species and significant natural plant community habitats; fire protection measures; sensitivities of working on NFS lands and identification of USFS sensitive species; hazardous substance spill prevention and containment measures; a contact person in the event of the discovery of dead or injured wildlife; and review of mitigation requirements. Discussion of GPs and BMPs shall include topics such as appropriate work limits, avoiding the spread of non-native plant species, fire safety, wildlife avoidance, trash and debris collection, spill prevention</p>

	<p>and containment protocol, and appropriate protocol for passage and/or construction near riparian zones. Sightings of sensitive wildlife species or harmful encounters with any wildlife species shall be reported to the Project biologist immediately for evaluation and, as necessary, reporting to agencies.</p> <p>6b. The WEAP shall also include the protocol to be followed when road kill is encountered in the work area or along access roads to minimize potential for additional mortality of scavengers, including listed species such as the California condor. On NFS/BLM lands, road kill shall be reported to the USFS/BLM or other applicable agency within 24 hours. On non-NFS lands, road kill shall be reported to the appropriate local animal control agency within 24 hours. Training materials and a course outline shall be provided to the USFS/BLM for review and approval at least 30 days before the start of construction. Maps showing the location of special-status wildlife, fish, or populations of rare plants, exclusion areas, or other construction limitations (e.g., limited operating periods) will be provided to the environmental monitors and construction crews before ground disturbance.</p> <p>6c. The training shall be conducted for all crew members present for the start of construction. If new crew members are brought to the Project after this time, they shall take part in the WEAP before beginning construction work; if the biologist is not available at this time, new crew members shall be given a summary handout of the WEAP until the full WEAP can be administered by the Project biologist, to be conducted no more than one workweek following the crew members' assignment to the Project. All crew members who have completed the WEAP shall submit their names to a list to be updated continuously and furnished to agencies upon request. No construction worker may work in the field for more than five days without participating in the WEAP.</p>
BIO-7	Wildlife Measure
BIO-8	Wildlife Measure
BIO-9	<i>No mitigation measures required for Impact BIO-9.</i>
BIO-10	<i>No mitigation measures required for Impact BIO-10.</i>
BIO-11	Wildlife Measure
BIO-12	<i>No mitigation measures required for Impact BIO-12.</i>
BIO-13	<p><i>Protect special-status plant species and their habitat.</i></p> <p>13a. Conduct preconstruction surveys for State and federal Threatened, Endangered, Proposed, Petitioned, Candidate, USFS Sensitive, USFS Watch, BLM Sensitive, and California Native Plant Society (CNPS) listed plants and avoid any occurrences of these plants. LADWP shall conduct preconstruction surveys for State and federally listed Threatened and Endangered, Proposed, Petitioned, and Candidate plants in a 250-foot radius around all areas subject to ground-disturbing activity, including, but not limited to, tower pad preparation and construction areas, tower removal sites, pulling and tensioning sites, assembly yards, and areas subject to grading for new access roads. The surveys shall be conducted during the appropriate blooming period(s) by a qualified plant ecologist/biologist according to protocols established by the USFWS, CDFG, USFS, BLM, and CNPS. The résumé of the proposed biologists will be provided to the USFS and BLM for concurrence before ground disturbance. The completion of these surveys shall be coordinated with the federal land manager. All listed plant species found shall be marked and avoided. If a federally listed plant species cannot be avoided on private land, consultation with USFWS will occur.</p> <p>13b. Before site grading, any populations of listed plant species identified during the surveys shall be protected by a buffer zone. The buffer zone shall be established around these areas and shall be of sufficient size to eliminate potential disturbance to the plants from human activity and any other potential sources of disturbance, including human trampling, erosion, and dust. The size of the buffer will depend upon the proposed use of the immediately adjacent lands, and include consideration of the plant's ecological requirements (e.g., sunlight, moisture, shade tolerance, edaphic physical and chemical characteristics) that are identified by a qualified plant ecologist and/or Forest botanist. At minimum, the buffer shrub species shall be equal to twice the drip line (i.e., two times the distance from the trunk to the canopy edge) to protect and preserve the root systems of the plant. The buffer for herbaceous species shall be, at minimum, 50 feet from the perimeter of the population or the individual. A smaller buffer may be established, provided there are adequate measures in place to avoid the take of the species, with the approval of the USFWS, CDFG, USFS, and BLM and in coordination with LADWP. If impacts to listed plants are determined to be unavoidable, the USFWS shall be consulted for authorization, through the context of a Biological Opinion. Additional mitigation measures to protect or restore listed plant species or their</p>

	<p>habitat may be required by the USFWS before impacts are authorized, whichever is appropriate.</p> <p>13c. Impacts to non-listed plant species (i.e., USFS Sensitive, CNPS List 1,2 and 4 species) shall first be avoided where feasible, and, where not feasible, impacts shall be compensated through reseedling (with locally collected seed stock), or other USFS or BLM approved methods. For USFS lands, if the ANF determines Project activities will result in the loss of a significant portion of the known individuals of USFS Sensitive plant species, and reseedling/transplanting are not feasible options, LADWP shall preserve existing off-site occupied habitat that is not already part of the public lands in perpetuity at a 2:1 mitigation ratio (habitat preserved: habitat impacted). This ratio will apply only to specific acreage inhabited by special-status plant species that are removed during construction, and will supersede ratios listed in Table BIO-MM-1 regardless of habitat type. The determination of a significant rare plant population loss will be decided by the ANF botanist on a species and location basis, after available literature, research, and overall species distribution are reviewed. If avoidance, reseedling/transplanting, and, preservation of off-site habitat occupied by the impacted species are not found to be possible, the ANF will consider off-site restoration of degraded ANF lands and/or preservation of non-public lands with suitable habitat for the impacted species. The preserved habitat shall be of superior or similar habitat quality to the impacted areas in terms of soil features, extent of disturbance, habitat structure, and dominant species composition, as determined by a qualified plant ecologist.</p> <p>13d. All special-status plant species impacted by Project activities shall be documented in an annual report and submitted to the federal land manager (USFS and BLM) until the success criteria outlined in the Habitat Restoration Plan are met. Where reseedling has occurred, LADWP shall track the success of the plants during the course of the annual restoration monitoring. This information shall be submitted as part of the annual report to the federal land manager (USFS and BLM).</p>
BIO-14	Wildlife Measure
BIO-15	Wildlife Measure
BIO-16	Wildlife Measure
BIO-17	Wildlife Measure
BIO-18	Wildlife Measure
BIO-19	Wildlife Measure
BIO-20	Wildlife Measure
BIO-21	Wildlife Measure
BIO-22	Wildlife Measure
BIO-23	Wildlife Measure
BIO-24	Wildlife Measure

1.3 EXISTING ENVIRONMENT

The physiography of the Project area in the Los Angeles and Kern County regions from north to south is the flat Antelope Valley gradually rising in elevation (Northern region) and giving way to the foothills of the Angeles National Forest (Central region). Continuing south, the foothills gradually give way to the City of Santa Clarita (Southern region). Drainages originating from the foothills of the ANF have carried rock detritus and water to the Santa Clarita area. This has produced several riparian areas, which support a rich, varied, and unique ecosystem. The diversity and distribution of biological resources within the study corridor are a function of the regional climate, soils, and topography. For most of the region, the availability of water or soil moisture is the critical factor that determines the broad distribution of vegetation types and associated wildlife species. To provide baseline conditions for the dominant soil type, water and habitat characteristics the biological study was divided to three ecotype regions (Northern, Central and Southern). The Northern and Southern regions of the Project do not occur within the ANF at all and are not discussed further. The Central region of the BRRTP encompasses the southern ends of Alternatives 1, 2, 2A, and 3, as well as Segment J (new 230 kV circuit between Haskell Canyon and the Castaic Power Plant), and is discussed below in greater detail.

1.4 CENTRAL REGION – ANF BOUNDARIES

Alternatives 1, 2, 2A, 3, the new 230 kV circuit (Segment J), and reconductoring component within the ANF are located in steep, mountainous terrain of the eastern Transverse Ranges, including the northern San Gabriel and Liebre Mountains. The ecotype is considered the Northern Transverse Range and is characterized by broad fault blocks and alleviated lowlands, and is dissected by granitic uplands (Table 5). The eco-region is characterized by its high elevation setting and the influence from upper level weather patterns in the west, decreasing to mid-elevation ranges along the eastern section. Along the southern end of the eco-region, the high-elevation mountain range transcends into the foothills of the Santa Clarita Valley. Long periods of hot, dry weather are not uncommon at the high elevations of the Northern Transverse Ranges. Precipitation ranges from 6 to 40 inches annually throughout the eco-region.

TABLE 5. SOIL TYPES PRESENT IN CENTRAL REGION

Segment	Soil Series	Drainage Class	Series Soil pH
Alternative 1	Cortina	Excessively drained	Slightly acid
Alternative 1	Hanford	Well drained	Slightly alkaline
Alternative 1	Metz	Somewhat excessively drained	Moderately alkaline
Alternative 1	Millsholm	Well drained	Neutral to slightly acid
Alternative 1	Mollic Haploxerafls	Well drained	Extremely acid
Alternative 1	Osito family	Well drained	Neutral to slightly acid
Alternative 1	Rock outcrop	N/A	Neutral
Alternative 1	Saugus	Well drained	Slightly acid
Alternative 1	Trigo family	Somewhat excessively drained	Slightly acid
Alternative 2/ Reconductor	Amargosa	Excessively drained	Neutral
Alternative 2/ Reconductor	Chino	Excessively drained	Moderately alkaline
Alternative 2/ Reconductor	Exchequer family	Somewhat excessively drained	Slightly acid
Alternative 2/ Reconductor	Greenfield	Well drained	Neutral
Alternative 2/ Reconductor	Hanford	Well drained	Slightly acid
Alternative 2/ Reconductor	Lodo family	Somewhat excessively drained	Slightly acid
Alternative 2/ Reconductor	Millsholm	Well drained	Slightly acid
Alternative 2/ Reconductor	Mollic Haploxerafls	Well drained	Extremely acid
Alternative 2/ Reconductor	Ramona	Well drained	Moderately acid
Alternative 2/ Reconductor	Rock outcrop	N/A	Neutral
Alternative 2/ Reconductor	San Andreas family	Well drained	Moderately acid
Alternative 2/ Reconductor	Trigo family	Somewhat excessively drained	Slightly acid
Alternative 2/ Reconductor	Tujunga family	Excessively drained	Slightly acid
Alternative 2/ Reconductor	Vista	Well drained	Neutral
Alternative 2/ Reconductor	Yolo	Well drained	Neutral
Alternative 2A	Amargosa	Excessively drained	Neutral
Alternative 2A	Exchequer family	Somewhat excessively drained	Slightly acid
Alternative 2A	San Andreas family	Well drained	Moderately acid
Alternative 2A	Trigo family	Somewhat excessively drained	Slightly acid
Alternative 3	Amargosa	Excessively drained	Neutral
Alternative 3	Anaverde	Well drained	Neutral
Alternative 3	Castaic	Well drained	Slightly acid
Alternative 3	Cortina	Excessively drained	Slightly acid
Alternative 3	Exchequer family	Somewhat excessively drained	Slightly acid
Alternative 3	Godde	Well drained	Slightly acid
Alternative 3	Greenfield	Well drained	Neutral
Alternative 3	Hanford	Well drained	Slightly acid
Alternative 3	Lodo family	Somewhat excessively drained	Slightly acid
Alternative 3	Metz	Somewhat excessively drained	Moderately alkaline
Alternative 3	Mocho	Well drained	Moderately alkaline
Alternative 3	Saugus	Well drained	Neutral to slightly acid
Alternative 3	Vista	Well drained	Neutral
Alternative 3	Wyman	Well drained	Neutral
Alternative 3	Yolo	Well drained	Neutral
New 230 kV Circuit	Castaic	Well drained	Slightly acid
New 230 kV Circuit	Hanford	Well drained	Slightly acid
New 230 kV Circuit	Metz	Somewhat excessively drained	Moderately alkaline
New 230 kV Circuit	Millsholm	Well drained	Slightly acid
New 230 kV Circuit	Mollic Haploxerafls	Well drained	Extremely acid
New 230 kV Circuit	Rock outcrop	N/A	Neutral
New 230 kV Circuit	Saugus	Well drained	Neutral to slightly acid
New 230 kV Circuit	Zamora	Well drained	Neutral

Within the central eco-region boundary, the vegetation composition is predominantly shrubs, approximately 137,000 acres. The eco-region is dominated by mixed chaparral series with a sparse mixture of deciduous and pine forests, decreasing in density as the elevation drops into the Santa Clarita Valley and Los Angeles Basin. Predominant plant species include *Quercus* spp. (Oak species), *Ceanothus* spp. (Sugar Brush), *Arctostaphylos glauca* (Big Berry Manzanita), *Adenostoma fasciculatum* (Chamise) and *Eriogonum fasciculatum* (California buckwheat). There are three major drainages and several small drainages that originate from the foothills of the Angeles National Forest and spread over the northwestern Los Angeles County region. The San Francisquito Canyon Creek, a minor drainage in the area, has several small distributaries. A second drainage, originating from Bouquet Reservoir, is Bouquet Canyon Creek. The third drainage, Santa Clara River, has several small distributaries, including Mint Canyon Creek, Rowher Canyon Creek, and Aqua Dulce Canyon Creek. The Santa Clara River also has two minor distributaries, San Francisquito Canyon Creek and Bouquet Canyon Creek. Many reaches of these natural and modified stream channels have the ability to support riparian areas and function as wildlife corridors.

Wildfires are an integral part in the biodiversity of plant and animals ecosystems in Southern California (Zedler 1995). Within the last fifty years, there have been nine fires that have burned over 10,000 acres within the Project area. One of the more recent large wildfires was the 2007 Buckweed Fire, which burned approximately 40,000 acres east of Santa Clarita and north of State Route 14 and burned through a significant portion of Alternatives 2 and 2a. The vegetation in this burned portion of Alternative 2 is varying in its regrowth response from a range of poor to moderate. The lack of highly successful regrowth can be attributed to the prevalence of invasive, non-native plants, which are outcompeting the native species.

1.4.1 Vegetation Communities

The Project Area within the ANF was surveyed during the spring and summer months in 2008, 2009, and 2010. Botanical surveys were conducted and current vegetation communities were mapped and the data used to refine existing Project vegetation maps that were based off of Gap Analysis Program (GAP) data. Twelve major vegetation communities were identified within the Project area in the Angeles National Forest. The most abundant is chamise chaparral, which appears most prominently on Alternative 2 and the new 230 kV Conductoring line, and is present on a majority of the Project area. Southern mixed chaparral, disturbed/developed land, and Riversidian sage scrub are all present in lower amounts relative to chamise chaparral. Scrub oak chaparral is present in the lowest amount of all vegetation communities, comprising less than 1% of the total Project area. Vegetation communities that are present within the forested Project Area and their respective acreages and disturbance estimates include the following:

TABLE 6. ESTIMATED TEMPORARY DISTURBANCE OF VEGETATION COMMUNITIES WITHIN THE BRRTP

Vegetation Community	Jurisdiction	Total Acreage	Temporary Minimum Disturbance (Ac)	Temporary Maximum Disturbance (Ac)	Permanent Minimum Disturbance (Ac)	Permanent Maximum Disturbance (Ac)	Percentage of Total Habitat Permanently Impacted in each Jurisdiction
Alternative 1 - 230 kV Double-circuit Transmission Line							
Chamise Chaparral	Forest Service	488.38	50.87	56.06	9.98	16.73	3.43%
Riversidian Sage Scrub	Forest Service	100.74	9.74	10.48	1.84	3.06	3.04%
Southern Coast Live Oak Riparian Forest	Forest Service	3.59	0.38	0.38	0.05	0.05	1.35%
Southern Cottonwood Willow Riparian Forest	Forest Service	8.04	0.86	0.86	0.23	0.42	5.28%

Vegetation Community	Jurisdiction	Total Acreage	Temporary Minimum Disturbance (Ac)	Temporary Maximum Disturbance (Ac)	Permanent Minimum Disturbance (Ac)	Permanent Maximum Disturbance (Ac)	Percentage of Total Habitat Permanently Impacted in each jurisdiction
Southern Mixed Chaparral	Forest Service	349.92	40.80	45.81	8.36	14.13	4.04%
Southern Sycamore Alder Riparian Woodland	Forest Service	2.38	0.25	0.25	0.07	0.13	5.28%
Southern Willow Scrub	Forest Service	12.91	1.11	1.30	0.19	0.32	2.48%
Alternative 2 – 230 kV Double-circuit Transmission Line							
Chamise Chaparral	Forest Service	344.45	38.61	39.38	6.9	10.11	2.9%
Disturbed/developed	Forest Service	231.75	24.86	24.86	4.84	7.80	3.4%
Riversidian Sage Scrub	Forest Service	82.47	8.85	8.85	1.37	1.84	2.2%
Southern Coast Live Oak Riparian Forest	Forest Service	20.33	3.01	3.40	0.56	0.69	3.4%
Southern Mixed Chaparral	Forest Service	81.79	8.77	8.77	1.89	3.24	4.0%
Southern Riparian Scrub	Forest Service	6.19	0.66	0.66	0.17	0.33	5.3%
Southern Sycamore Alder Riparian Woodland	Forest Service	20.32	2.18	2.18	0.50	0.50	2.5%
Alternative 2A - 230 kV Double-circuit Transmission Line							
Canyon Live Oak Forest*		-	-	-	-	-	-
Chamise Chaparral	Forest Service	344.44	38.61	39.38	6.90	10.11	2.94%
Disturbed/developed	Forest Service	119.26	12.45	12.72	2.15	3.24	2.72%
Interior Live Oak Chaparral	Forest Service	53.92	5.18	5.60	1.14	2.06	3.83%
Riversidian Sage Scrub	Forest Service	82.47	8.85	8.85	1.37	1.84	2.23%
Scrub Oak Chaparral	Forest Service	30.05	3.12	3.19	0.78	1.46	4.85%
Southern Coast Live Oak Riparian Forest	Forest Service	20.33	3.01	3.40	0.56	0.69	3.39%
Southern Mixed Chaparral	Forest Service	268.16	25.39	27.88	5.17	9.03	3.37%
Southern Riparian Scrub	Forest Service	6.19	0.66	0.66	0.17	0.33	5.28%
Southern Sycamore Alder Riparian Woodland	Forest Service	15.32	1.64	1.64	0.43	0.81	5.27%
Alternative 3 - 230 kV Double-circuit Transmission Line							
Disturbed/developed	Forest Service	19.45	2.12	2.13	0.56	1.04	5.35%
Riversidian Sage Scrub	Forest Service	140.94	24.72	28.19	5.81	9.57	6.79%
Scrub Oak Chaparral	Forest Service	54.36	5.83	5.83	1.52	2.87	5.28%
Southern Riparian Scrub	Forest Service	6.47	0.69	0.69	0.18	0.34	5.28%
Reconductoring							
Chamise Chaparral	Forest Service	304.26	32.65	32.65	8.54	16.07	5.3%
Disturbed/developed	Forest Service	235.69	25.28	25.28	4.86	7.77	3.3%
Riversidian Sage Scrub	Forest Service	85.68	10.30	10.30	2.69	5.07	5.9%
Southern Coast Live Oak Riparian Forest	Forest Service	61.53	6.60	6.60	1.73	3.25	5.3%
Southern Mixed Chaparral	Forest Service	74.74	8.01	8.01	1.69	2.87	3.8%
Southern Riparian Scrub	Forest Service	6.17	0.66	0.66	0.17	0.33	5.3%
Southern Sycamore Alder Riparian Woodland	Forest Service	19.61	2.34	2.34	0.54	0.95	4.8%
New 230 kV Circuit							
Chamise Chaparral	Forest Service	139.37	21.06	23.05	4.73	8.03	5.8%
Riversidian Sage Scrub	Forest Service	55.49	5.96	5.96	1.20	1.98	3.6%
Southern Coast Live Oak Riparian Forest	Forest Service	6.11	0.66	0.66	0.08	0.08	1.3%
Southern Cottonwood Willow Riparian Forest	Forest Service	7.49	0.80	0.80	0.21	0.40	5.3%
Southern Sycamore Alder Riparian Woodland	Forest Service	1.78	0.19	0.19	0.05	0.09	5.1%

*Note: Although Canyon Live Oak Forest was identified as a vegetation community present on Alternative 2a during 2010 BRRTTP botanical surveys, it is not one of the communities listed in the Gap Analysis Program (GAP) data for this area (POWER 2010c). Because vegetation community mapping was not conducted during the botanical surveys, the exact area and corresponding impact acreages for Canyon Live Oak Forest were not calculated. Acreage numbers for other habitat types listed on Alternative 2a thus may be smaller than those listed in the table above, which is based only on GAP data. This will not change the total acreage of Alternative 2a.

2.0 INVENTORY RESULTS AND RISK ASSESSMENT

An inventory for noxious and other invasive weed species was performed concurrently with focused rare plant surveys and floristic inventories on the ANF for the Project alternative areas. These surveys are described in the BA/BE. Risk is assessed for areas of potential disturbance, and is discussed in Section 3.0. Noxious weeds listed and described below include those which could occur in or near the Project area. While not all of these species were located during botanical surveys, it is understood that they may still occur in the Project area at the time of construction. Therefore, all potential noxious weed species are analyzed in this section with their level of risk, life history, and known control methods if encountered within the Project area.

2.1 DEFINITION OF NOXIOUS WEEDS

Noxious weeds are defined in this weed risk assessment as any plant species designated as such by the Secretary of Agriculture, pursuant to the Plant Protection Act of 2000, or by a responsible State official, as the case may be. Noxious weeds typically conform to at least one of the following traits: aggressive and difficult to manage, poisonous, toxic, parasitic, a carrier or host of serious insects or disease, and non-native, new, or uncommon in the United States or its specific parts (USFS 1990). Numerous noxious weed species are known to exist near or within the Project area, according to surveys conducted for Forest Service land management plans (USFS 2005) and surveys conducted for the BRRTTP in 2008, 2009, and 2010.

Noxious weed species are organized below in Table 7 according to California Invasive Plant Inventory (Cal-IPC 2006) and California Department of Food and Agriculture (CDFA 2009) threat ratings. Included are species that were observed during surveys. This Forest Service list of non-native plants is not exhaustive, but represents known and/or approved target noxious weed species occurring within or near the Project site locations or rights-of-way. These are the species that were considered in the weed risk assessment analysis. Selected species were mapped during surveys, according to instructions from the Forest Service botanist.

TABLE 7. NOXIOUS AND INVASIVE WEED SPECIES IN OR NEAR ALL ALTERNATIVES OF THE PROJECT AREA ON THE ANF

SPECIES NAME	COMMON NAME
High Risk Noxious Weed Species	
<i>Arundo donax</i>	giant reed
<i>Bromus madritensis</i> ssp. <i>rubens</i>	red brome
<i>Bromus tectorum</i>	cheatgrass
<i>Centaurea solstitialis</i>	yellow star-thistle
<i>Foeniculum vulgare</i>	fennel
<i>Lepidium latifolium</i>	perennial pepperweed
<i>Rubus discolor</i>	Himalayan blackberry
<i>Spartium junceum</i>	Spanish broom
<i>Tamarix ramosissima</i>	tamarisk
Moderate Risk Weed Species	
<i>Ageratina adenophora</i>	eupatory
<i>Ailanthus altissima</i>	tree of heaven

SPECIES NAME	COMMON NAME
<i>Avena bartata</i>	slender wild oat
<i>Avena fatua</i>	wild oat
<i>Bromus diandrus</i>	ripgut brome
<i>Centaurea melitensis</i>	toçalote
<i>Cirsium vulgare</i>	bull thistle
<i>Cynara cardunculus</i>	artichoke thistle
<i>Hirschfeldia incana</i>	shortpod mustard
<i>Nicotiana glauca</i>	tree tobacco
<i>Sisymbrium altissimum</i>	tumble mustard
<i>Vulpia myuros</i>	rat-tail fescue
Lower Risk Weed Species	
<i>Bromus hordeaceus</i>	soft chess brome
<i>Cistus ladanifer</i>	crimson spot rockrose
<i>Cnicus benedictus</i>	blessed thistle
<i>Erodium</i> spp.	filaree
<i>Lactuca serriola</i>	prickly lettuce
<i>Lathyrus latifolius</i>	perennial sweet pea
<i>Marrubium vulgare</i>	horehound
<i>Melilotus officinalis</i>	yellow sweetclover
<i>Piptatherum miliaceum</i>	smilo grass
<i>Polypogon monspeliensis</i>	rabbitfoot grass
<i>Robinia pseudoacacia</i>	black locust
<i>Salsola tragus</i>	Russian thistle
<i>Schismus barbatus</i>	Mediterranean grass
<i>Sonchus</i> spp.	sowthistle

2.2 SPECIES ACCOUNTS OF WEEDS AND KNOWN APPROPRIATE CONTROL METHODS

2.2.1 High Risk Noxious Weed Species

These species have high impacts on physical processes, plant and animal communities, and vegetation structure of the environments in which they establish. They typically experience moderate to high rates of dispersal and establishment and most have wide ecological distribution ranges.

Giant Reed (*Arundo donax*)

Status

Cal-IPC Inventory Rating: High

CDFA Pest Rating: B

Observed within Survey Area: Yes, observed in the new 230 kV circuit corridor and access road for Segment D (Alternative 1).

Ecology

Giant reed is a tall perennial in the Grass Family (*Poaceae*) that grows to eight feet (DiTomaso and Healy 2007). Giant reed grass forms dense stands on disturbed sites, sand dunes, riparian areas, and wetlands (Cal-IPC 2008). Giant reed occurs in many soil types, grows best in well drained moist soils, and can tolerate some salinity to an elevation of 1,630 feet (DiTomaso and Healy 2007). This species reproduces vegetatively from rhizomes and fragments of stems and rhizomes (DiTomaso and Healy 2007). It has invaded central California River valleys in San Luis Obispo and Monterey Counties, the San Francisco Bay Area, and the Sacramento and San Joaquin River valleys, and is also increasing in the North Coast

region. Giant reed is threatening California's riparian ecosystems by outcompeting native species, such as willows, for water, nutrients, and space.

Control Methods

- **Prevention:** The best preventative measure is the early removal of small infestations. As no known reproduction takes place by seed, all rhizome fragments must be removed from the site to ensure eradication.
- **Mechanical:** Smaller plants (less than six feet tall) can be pulled by hand when the soil is moist. Care should be taken to remove all rhizome (underground horizontal stems that produce roots below and shoots above) fragments. With larger plants, the aboveground canes can be cut with a chainsaw or brushcutter. The rhizomes must then be removed as completely as possible by using shovels, pickaxes, or, in very large infestations, excavators. If it is not possible or feasible to remove all underground rhizomes, stems can be cut in May and then covered with a heavy (so that the re-sprouts do not tear through) tarp for the remainder of the season to shade out re-sprouts; or as described below, a herbicidal treatment may be used to help kill rhizomes. Any removed stems and roots should be burned on-site to prevent rerooting.
- **Fire Management:** Prescribed burns remove the aboveground canes, but may encourage regrowth. Large infestations of giant reed can produce tall, hot-burning fire ladders that increase the intensity and impact of fires, and also allow flames to spread to the canopy in riparian areas.
- **Cultural:** A schedule of natural flood dynamics, if available, may help native species to compete with giant reed, which can thrive with or without flooding (McWilliams 2004).
- **Herbicide:** Herbicide treatment works best to kill any remaining rhizomes after cutting, although some practitioners have used a systemic foliar spray application, sprayed onto intact plants after the plant has flowered, but before summer dormancy (Holloran et al. 2004). Application of systemic herbicide is most effective after the flowering period between July and October, and treatment of regrowth is most effective from March to July (DiTomaso and Healy 2007). Cutting and treating stems of mature plants is an effective method between March and October. Stronger solutions of herbicides can be directly applied to cuts. For a foliar spray, a weaker solution is applied. In either case, only herbicides specifically approved for use in wetland environments should be used.

Red Brome (*Bromus madritensis* ssp. *rubens*)

Status

Cal-IPC Inventory Rating: High

CDFA Pest Rating: Unrated

Observed within Survey Area: Yes, observed on all Alternatives.

Ecology

Red brome is native to southern Europe, northern Africa, and southwestern Asia (Cal-IPC 2008), and grows in open disturbed areas, roadsides, fields, ranges, agronomic crops, orchards, forestry sites, and many natural plant communities in California and beyond, up to 7,220 feet in elevation. Red brome is spreading in coastal scrub communities, and since the species is highly flammable when dry, it is also increasing the frequency and spread of wildfire in certain communities, contributing to the conversion of coastal scrub into annual grassland. The species often inhabits areas with dry sandy soils where there is less competition with other vegetation (DiTomaso and Healy 2007).

Red brome provides very little in terms of usable forage or cover for native wildlife species. The seeds are not palatable to herbivores.

Control

- **Prevention:** Proper stocking levels and the protection of soil resources are the best known land management practices preventing the establishment and spread of cool-season annual grasses in California. However, preventing the spread or eradicating these grasses is difficult. The majority of grasslands within the state are now dominated by these and other exotic annual grasses.
- **Mechanical:** Few mechanical methods are suitable or effective in annual *Bromus* control. Precisely timed mowing, after the grass has begun to flower, but before it has produced mature seeds (a period of about a week), can help reduce the amount of seed produced each year. In agricultural areas, intensive or deep tilling can help eradicate infestations.
- **Fire Management:** Burning tends to promote the establishment, growth, and spread of these grass species. Late season burns can significantly increase *Bromus* densities in subsequent years (DiTomaso and Healy 2007). Some practitioners have advocated burning sites after seed is set but before the plants shatter, which reduces the amount of viable seed. However, like other burn control methods, this appears to increase the site's susceptibility to subsequent invasions (DiTomaso and Healy 2007), and therefore is not recommended.
- **Cultural:** Non-native perennial grasses, such as crested wheatgrass, are effective in out-competing and controlling red brome. However, it has been observed that over time these grasses do not provide an adequate community for local wildlife, and can lead to declines in the populations of small mammals, raptors, sage-grouse, songbirds, and other vertebrates and invertebrates (Zouher 2003). Some native species, however, such as Sandberg bluegrass (*Poa secunda*), bottlebrush squirreltail (*Elymus elymoides*), Thurber's needlegrass (*Achnatherum thurberianum*), western wheatgrass (*Pascopyrum smithii*), and thickspike wheatgrass (*Elymus lanceolatus*) have shown success in revegetating and dominating sites once infested by red brome. Any species that is planted for replacement of red brome must be able to germinate and produce a vigorous seedling within one to two days of watering, and then sustain the possibility of a drought. It is recommended that any shrubs that are planted to replace red brome be at least one year old to increase their competitive abilities (Simonin 2001).
- **Biocontrol:** There are currently no insects or fungi approved by the USDA for use as biological controls against red brome, although there are known fungi and diseases which inhibit the growth or spread of cheatgrass or red brome (Zouhar 2003; Simonin 2001). It is recommended that grazing occur before brome grass plants turn purple, and that two defoliations occur each spring for at least two consecutive years for proper control.
- **Herbicide:** No herbicidal methods are currently a good option for annual *Bromus* grass control, due to the extensive nature of many infestations. As the grasses become dominant species in the habitats they invade, targeting specific areas for eradication and not affecting other co-occurring native species is difficult. Herbicidal treatment, if conducted, should occur for between two and five consecutive years (Zouher 2003). Some herbicides that have been effective against red brome, either alone or in combination, are quizalofop, fluazifop-p-butyl, sethoxydim, paraquat, glyphosate, imazapic, sulfometuron methyl, and atrazine. However, care should be taken such that herbicidal treatment does not kill other plants and lead to less competition and greater proliferation of red brome.

Cheatgrass (*Bromus tectorum*)

Status

Cal-IPC Inventory Rating: High

CDFA Pest Rating: Unrated

Observed within Survey Area: Yes, observed on all Alternatives.

Ecology

Cheatgrass has spread across millions of acres in the west, up to 7,170 feet in elevation, and is thought to have altered the natural fire frequency in many plant communities. It also has the ability to carry fire into areas that previously would not ordinarily burn. The spread of the Devil Fire and Willow Fire, which burned approximately 12,000 acres and 65,000 acres, respectively, are believed to have been facilitated by cheatgrass (DiTomaso and Healy 2007).

The continued spread and dominance of cheatgrass represents several potential impacts to native species. Cheatgrass can out-compete native plant species, including both common and rare species. Cheatgrass can also change the character of the forest floor, covering it with a relatively dense growth of grass where none would have otherwise been present. This can also alter the soil components and productivity. Cheatgrass dries in early summer, leaving the forest floor covered with a dry flashy fuel that carries fire quickly.

Cheatgrass provides very little in terms of usable forage or cover for native wildlife species. The seeds are not palatable to herbivores.

Control

- **Prevention**: Proper stocking levels and the protection of soil resources are the best known land management practices preventing the establishment and spread of cool-season annual grasses in California. However, preventing the spread or eradicating these grasses is difficult. The majority of grasslands within the state are now dominated by these and other exotic annual grasses.
- **Mechanical**: Few mechanical methods are suitable or effective in annual *Bromus* control. Precisely timed mowing, after the grass has begun to flower, but before it has produced mature seeds (a period of about a week), can help reduce the amount of seed produced each year. In agricultural areas, intensive or deep tilling can help eradicate infestations.
- **Fire Management**: Burning tends to promote the establishment, growth, and spread of these grass species. Late season burns can significantly increase *Bromus* densities in subsequent years (DiTomaso and Healy 2007). Some practitioners have advocated burning sites after seed is set but before the plants shatter, which reduces the amount of viable seed. However, like other burn control methods, this appears to increase the site's susceptibility to subsequent invasions (DiTomaso and Healy 2007), and therefore is not recommended.
- **Cultural**: Non-native perennial grasses, such as crested wheatgrass, are effective in out-competing and controlling cheatgrass. However, it has been observed that over time these grasses do not provide an adequate community for local wildlife, and can lead to declines in the populations of small mammals, raptors, sage-grouse, songbirds, and other vertebrates and invertebrates (Zouhar 2003). Some native species, however, such as Sandberg bluegrass (*Poa secunda*), bottlebrush squirreltail (*Elymus elymoides*), Thurber's needlegrass (*Achnatherum thurberianum*), western wheatgrass (*Pascopyrum smithii*), and thickspike wheatgrass (*Elymus lanceolatus*) have shown success in revegetating and dominating sites once infested by cheatgrass. Any species that is planted for replacement of cheatgrass must be able to germinate and produce a vigorous seedling within one to two days of watering, and then sustain the possibility of a drought. It is recommended that any shrubs that are planted to replace cheatgrass be at least one year old to increase their competitive abilities (Simonin 2001).
- **Biocontrol**: There are currently no insects or fungi approved by USDA for use as biological controls against cheatgrass, although there are known fungi and diseases which inhibit the growth or spread of cheatgrass or red brome (Zouhar 2003; Simonin 2001). It is recommended that grazing occur before cheatgrass plants turn purple, and that two defoliations occur each spring for at least two consecutive years for proper control.

- **Herbicide:** No herbicidal methods are currently a good option for annual *Bromus* grass control, due to the extensive nature of many infestations. As the grasses become dominant species in the habitats they invade, targeting specific areas for eradication and not affecting other co-occurring native species is difficult. Herbicidal treatment, if conducted, should occur for between two and five consecutive years (Zouher 2003). Some herbicides that have been effective against cheatgrass, either alone or in combination, are quizalofop, fluazifop-p-butyl, sethoxydim, paraquat, glyphosate, imazapic, sulfometuron methyl, and atrazine. However, care should be taken such that herbicidal treatment does not kill other plants and lead to less competition and greater proliferation of the cheatgrass.

Yellow Star-thistle (*Centaurea solstitialis*)

Status

Cal-IPC Inventory Rating: High

CDFA Pest Rating: C

Present within Survey Area: Yes, observed in the new 230 kV circuit corridor.

Ecology

Yellow star-thistle is a deep-rooted winter annual forb in the Sunflower Family (*Asteraceae*). Yellow star-thistle inhabits open hills, grasslands, open woodlands, fields, roadsides, and rangelands. This species is considered one of the most serious rangeland weeds in the state (Cal-IPC 2008). Yellow star-thistle is extremely invasive, and at present is spreading in mountainous regions below 7,500 feet in elevation (DiTomaso and Gerlach 2000). It reproduces from seed, and each plant is capable of producing up to 75,000 seeds. Seeds can remain viable in the soil for up to ten years (Callahan et al. 1993). One reason for yellow star-thistle's extreme invasiveness is its ability to grow vigorously late in the season, when most native plants are dormant. It is highly competitive with native plants, especially in grazed areas, and is capable of forming monocultures that maintain dominance over an area for many years.

Control

- **Prevention:** Fertilizer application, dry-season irrigation, or ill-timed mowing may increase infestation occurrence and severity. Much like tocalote (*Centaurea melitensis*), intense infestations may be avoided through responsible range management, including the appropriate stocking of susceptible rangelands. Vegetation should shade as much of the soil surface as possible to discourage yellow star-thistle growth (Zouhar 2002).
- **Mechanical:** Mowing can provide effective treatment of infested areas if mowed at the correct time, which is immediately after the earliest 2% to 5% of plants have begun to produce flower heads, usually in June (DiTomaso and Healy 2007). Mowing too early may cause plants to become bushier and produce more flower heads. Treatments should continue for at least two to three years, after which spot eradication may be required indefinitely. Mow immediately after the earliest 2% to 5% of plants have begun to produce flower heads (May/June). Additionally, hand-pulling may be used as a follow-up treatment for re-sprouting yellow star-thistle rosettes produced by root fragments remaining in the soil.
- **Fire Management:** Prescribed burning of yellow star-thistle can reduce populations if timed correctly, similar to mowing-based treatments. Burning should occur after other annual plants have dried but before yellow star-thistle seeds are produced (DiTomaso and Healy 2007).
- **Cultural:** Sites should be revegetated with competitive native or high-forage non-native perennial grasses that are suitable for the site (Zouhar 2002). This may be most effective when combined with herbicide treatments to suppress yellow star-thistle growth. Grazing should not occur until the site has been fully recovered.
- **Biocontrol:** Responsible rangeland management, where lands are grazed by sheep, goats, or cattle to a moderate degree, can help prevent establishment and/or spread of populations in grasslands.

Infested areas can be treated by high-intensity grazing between the period when the plant bolts (May through June) to just before the plant produces spiny seed heads in July and August. Yellow star-thistle is toxic to horses and causes permanent brain damage leading to nigropallidal encephalomalacia, commonly known as chewing disease (DiTomaso and Healy 2007). Several biocontrol insects have been used in attempts to control infestations. Perhaps the most promising insect biocontrol agent is the yellow star-thistle hairy weevil (*Eustenopus villosus*), which causes damage to the seed heads (reducing reproduction) in both the larval and adult stages (Environmental Laboratories 2007). While this and several other biocontrol insects have been established in sites around California, it has yet to substantially reduce infestation throughout the state. In very dense infestations, however, local release may allow the temporary formation of a large, active, biocontrol population in that area. Some of the same insects established for biocontrol of yellow star-thistle may affect spotted knapweed, but these species favor and will preferentially attack yellow star-thistle. Other insect species have been released in California to control knapweeds, but it is too early to gauge the treatment efficacy (DiTomaso and Healy 2007). The following insects have been released for biological control of yellow star-thistle in California (Zouhar 2002):

Control Agent	Mode of Action
Seedhead weevil (<i>Bangasternus orientalis</i>)	Attacks the early bud stages
Hairy weevil (<i>Eustenopus villosus</i>)	Feeds on mid-stage buds and lays eggs in late-stage buds
Flower weevil (<i>Larinus curtus</i>)	Lays eggs in open flowers
Seedhead fly (<i>Urophora sirunaseva</i>)	Forms galls in seedheads
Peacock fly (<i>Chaetorellia australis</i>)	Feeds in seedheads
False peacock fly (<i>Chaetorellia succinea</i>)	Feeds in seedheads

- **Herbicide:** Herbicide treatments by foliar spray or wick application are generally used to control or reduce spot infestations, or as follow-up to more intensive mechanical, grazing, or fire management-based treatments.

Fennel (*Foeniculum vulgare*)

Status

Cal-IPC Inventory Rating: High

CDFA Pest Rating: Unrated

Observed within Survey Area: Yes, observed in the new 230 kV circuit corridor.

Ecology

Fennel is an erect perennial herb in the Carrot Family (*Apiaceae*) that flowers from May to October. It reproduces by prolific seed production, and sometimes vegetatively. It tolerates drought and frost (DiTomaso and Healy 2007). The plant is very common throughout the state, and can drastically alter the composition and structure of many plant communities, including grasslands, coastal scrub, riparian, and wetland communities (Cal-IPC 2008). Fennel can occur in disturbed areas, such as along roadsides, up to 5,860 feet in elevation, but is more common below 1,140 feet. Established plants are competitive, and soil disturbance facilitates the development of dense stands, where native vegetation is sometimes completely excluded (DiTomaso and Healy 2007).

Control

- **Prevention:** Fennel colonizes sites with disturbed soils, so activities that cause soil disturbance should be revegetated with native species as soon as possible, particularly in chaparral habitats

(Holloran et al. 2004). Managing areas to minimize soil disturbance can help prevent the establishment, or control the spread, of this species.

- **Mechanical:** Mechanical removal of this species is most successful when the plants are young and have not developed a large taproot. Small seedlings or individual plants in small infestations can be removed when the soil is moist, using soil knives or trowels for seedlings and shovels or hand picks for larger plants with established taproots. For larger or denser infestations, frequent, repeated mowing every three months for approximately four years is often sufficient to reduce or eradicate fennel (Holloran et al. 2004). Infestations should not be mown during seed set, as this facilitates spread by seed. Burning followed by herbicide treatments for two years can also control or eradicate fennel infestations.
- **Fire Management:** Fall burning followed by herbicide treatments for two years can also control or eradicate fennel (DiTomaso and Healy 2007).
- **Biocontrol:** No known biocontrol agents provide safe or effective treatment of fennel infestations. Cattle will graze younger leaves but avoid the plant as the foliage matures later in the season.
- **Herbicide:** A 2% glyphosate solution can be applied as a foliar spray in grassland environments after seedlings germinate and/or older plants re-sprout from the rootstock in spring. However, this method may affect other native vegetation that co-occurs with the infestation and should be used with care. Herbicidal treatments are often used in concert with mechanical or burn methods, and some experts recommend mowing, waiting for seedlings and re-sprouts to emerge, and following with a foliar spray (Holloran et al. 2004). For infestations near wetlands or aquatic habitats, only herbicides specifically approved for use in these sensitive habitats should be applied.

Perennial Pepperweed (*Lepidium latifolium*)

Status

Cal-IPC Inventory Rating: High

CDFA Pest Rating: B

Observed within Survey Area: Yes, observed in the new 230 kV circuit corridor.

Ecology

Perennial pepperweed is a perennial herb in the Mustard Family (*Brassicaceae*). It typically grows on moist or seasonally wet sites (DiTomaso and Healy 2007). Preferred habitats include non-crop areas such as wetlands, riparian areas, meadows, vernal pools, salt marshes, flood plains, sand dunes, roadsides, and irrigation ditches, as well as ornamental plantings and agronomic crops, including alfalfa, orchards, vineyards, and irrigated pastures. It blooms from May to September and grows very aggressively, forming dense colonies that exclude native species, up to 7,220 feet in elevation. It reproduces both by seed and vegetatively from its roots and small root fragments. Perennial pepperweed is a state-listed noxious weed in California and many other western states (Cal-IPC 2008).

Control

- **Prevention:** Prevention of perennial pepperweed infestations is best accomplished through application of appropriate BMPs designed to reduce the spread of propagules, either seeds or root fragments, from infested areas. Any construction equipment used in an area supporting perennial pepperweed should be well cleaned before being used in another area. Similarly, hay, crops, and fill soils should not be harvested or exported from an area infested by this species.
- **Mechanical:** Unless dealing with a small infestation, plants should not be pulled by hand. Repeated mowing, grazing, or even burning without concurrent implementation of other measures is also often ineffective (DiTomaso and Healy 2007). To prevent re-sprouting from roots, mowing treatments can be followed by covering the root system with cardboard or landscape cloth. Alternatively, mowing can be used if timed correctly and followed with herbicides as described below. First, plants should be mowed as close to the ground as possible as soon as flowers appear in

spring, then mowed again when re-sprouts produce more flowers, before seed has been set in both cases. Herbicide application is subsequently required (Holloran et al. 2004; DiTomaso and Healy 2007).

- **Cultural:** Competitive species should be planted into areas desired for recovery, followed by repeated applications of selective herbicides to help control the peppergrass while the desired species establish (Zouhar 2004).
- **Biocontrol:** No known biocontrol agents provide safe or effective treatment of pepperweed infestations. Sheep and goats will graze this species if other food is not available, but this is not an effective method of control due to clonal reproduction and re-sprouting from the root system.
- **Flooding:** One promising treatment for this wetland invader, when feasible, is long-term flooding of infested areas. Perennial pepperweed is adapted to seasonal hydrology and does not tolerate soils saturated for a long duration. However, if native plants are still present on-site, these may also be adapted to seasonal hydrology and could be negatively affected.
- **Herbicide:** Mowing is most effective when followed by herbicide treatment, but do not apply herbicide to non-mowed plants because perennial pepperweed leaves produce a thick waxy coating that prevents foliar uptake. Instead, herbicide should be applied directly after the second mowing as described above. When working in or near wetlands, only herbicides specifically approved for use in these sensitive habitats should be used.

Himalayan Blackberry (*Rubus discolor*)

Status

Cal-IPC Inventory Rating: High

CDFA Pest Rating: Unrated

Observed within Survey Area: No, not observed during the BRRTP weed surveys. However, it is known to be within the Project's vicinity and is considered likely to invade or colonize areas disturbed by construction or other ground-disturbing activities.

Ecology

Himalayan blackberry grows just about anywhere there is water or seasonal water in elevations up to 5,210 feet in elevation. It can also grow along objects such as fences and buildings, but is more common in riparian areas. Himalayan blackberry has been known to colonize initially disturbed areas that have been neglected by humans and, if not controlled, dominate lands due to its strong competitive abilities. It can out-compete native plant species rapidly and can also hinder wild animals from gaining access to water ways (Bossard, Randall, and Hoshovsky 2000).

Control

- **Prevention:** There are no known land management practices that would discourage establishment of Himalayan blackberry that do not also discourage the establishment of favorable native bramble species. However, removal of small, initial infestations is the best method to prevent the development of large monocultural stands that are typically difficult to eradicate.
- **Mechanical:** Cutting stems can be an effective mode of removal, but as this species has several methods of vegetative reproduction, purely mechanical eradication means can be problematic. Stems should be cut with a chainsaw, scythe, or tractor-mounted mower followed by the removal of as much underground tissue as possible, which can be prohibitively labor-intensive in large infestations. While cutting does not stimulate lateral root sprouting, stems will re-grow from root crowns. Large, older root crowns are often difficult or impossible to remove completely. As plants can reproduce from cut primocanes, slash piles should be burned. As with most mechanical control methods, success is often achieved only after several sequential cuts that exhaust the plants' resources. Optimal timing for cutting is just after the commencement of flowering.

- **Fire Management:** Burning can be an effective means to control large thickets, but as fires do not kill underground tissues, re-sprouts require follow-up mechanical or herbicidal control. Slash burning as described above will prevent the establishment of new infestations from re-rooted primocanes.
- **Biocontrol:** The USDA has not supported research on insect biocontrol agents for this species due to the large number of commercially important *Rubus*-based crop berries (Bossard et al. 2000). However, a fungal rust (*Phragmidium violaceum*) was discovered in Oregon in 2005 that may eventually provide effective bioagent-based control in California (DiTomaso and Healy 2007). Additionally, although the spiny plants are usually avoided by large livestock, the foliage provides year-round, palatable forage, and goat and sheep herds have been successfully used to control re-sprouting following other control methods, to manage the spread of large infestations, and reclaim or prevent further spread into pastures (Bossard et al. 2000).
- **Herbicide:** Mechanical control methods, such as cutting, are most effective if immediately followed by herbicide application. Some researchers report that herbicidal methods are the most effective means of control (DiTomaso and Healy 2007), but caution should be used due to the species' tendency to infest riparian areas. Only herbicides specifically approved for use in aquatic and wetland habitats should be employed in control efforts for this species in riparian habitats, and care should be taken to minimize damage to native aquatic and emergent vegetation through careful application. Some herbicides that have been found to be highly effective in controlling Himalayan blackberry are glyphosate, picloram + 2,4-D, triclopyr ester, or triclopyr amine (Tirmenstein, 1989).

Spanish Broom (*Spartium junceum*)

Status

Cal-IPC Inventory Rating: High

CDFA Pest Rating: C

Observed within Survey Area: Yes, observed on Alternatives 2 and 2a.

Ecology

Spanish broom is a yellow-flowered shrub in the Pea Family (*Fabaceae*) with many long, straight, dark green stems. It is widespread in drier coastal and interior regions of California up to 1,950 feet in elevation. The long-lived shrubs reproduce from abundantly produced seed, which remain viable for at least five years. Spanish broom invades open sites on hot, dry hillsides, especially in chaparral areas. Spanish broom rapidly develops dense colonies that prevent establishment by native shrubs. These stands are considered a fire hazard and are of little value to wildlife (Nilsen 2000).

Control

- **Prevention:** Minimization of soil disturbance, followed by immediate revegetation of any areas that must be disturbed through temporary impacts, is the best way to prevent infestation by Spanish or Scotch broom (*Cytisus scoparius*). Areas where temporary grading impacts have occurred should be monitored until successfully revegetated to catch initial colonizers, which should be manually removed as described below. Once a large population is established, eradication is very difficult due to the large, long-lived seed bank that develops (DiTomaso and Healy 2007). However, careful removal of initial colonizers as described below can help prevent the formation of a colony.
- **Mechanical:** Remove individual plants in late winter to spring when the soil is moist and plants are most easily removed from the soil, using a weed wrench or similar tool to get as much taproot as possible. This is most efficient when removing the initial colonizers of an area to prevent a large infestation, but once a large infestation is present, spring hand pulling of successive generations is still thought to be the most effective method of control (Holloran et al. 2004). Untreated cut stems will re-sprout, and will require repeated cutting unless treated, although in medium to large shrubs, re-sprouting can be reduced by removing all of the bark from the cut stump down to ground level.

Wherever mature plants are removed by pulling or cutting, seedlings will have to be treated for at least the following five to eight years to prevent a recurrence of the infestation. Seedlings should be raked with a Hula Hoe soon after germination or flamed with a propane torch.

- Fire Management: Burn-based control methods is not recommended for this species, due to the danger of fire spreading to tree canopies.
- Cultural: Some research suggests that planting tall shrubs or trees in or near populations of Spanish broom may reduce their photosynthesis and help control their populations, while other research suggests that Spanish broom is an early successional plant and may be replaced by later seral vegetation if left alone (Zouhar 2005).
- Biocontrol: Three species of biocontrol insects have been released to control Spanish broom, but these have so far been ineffective in achieving control of infestations (DiTomaso and Healy 2007). Grazing is not typically an effective means to control Spanish broom, although if goats are confined to a small enough area following a cutting treatment, they can remove re-sprout growth as it occurs (DiTomaso and Healy 2007).
- Herbicide: Applying herbicide to fresh wounds following cutting can reduce the degree of re-sprouting, but will not prevent new generations of seedlings from germinating each year. Plants will require treatment for a period of several years for herbicide treatments to be effective. There is also a risk of affecting non-target species as well.

Tamarisk/saltcedar (*Tamarix ramosissima*)

Status

Cal-IPC Inventory Rating: High

CDFA Pest Rating: B

Observed within Survey Area: Yes, observed on Alternatives 2 and 2a and the reconductoring corridor.

Ecology

Saltcedar is a deciduous shrub or a tree in the Tamarix Family (*Tamaricaceae*) that can be found along streams and lake shores throughout California. It is associated with dramatic changes in geomorphology, groundwater availability, soil chemistry, fire frequency, plant community composition, and native wildlife diversity (Cal-IPC 2008). The plant can use both groundwater and surface water, and has an extensive deep root system, both of which aid it in decreasing the local water table. The plant also extracts salts from the deep soil layers and excretes them on its leaves, which when falling, increase the soil surface salinity and inhibit native species growth. Saltcedar prefers habitats such as river, lake, and pond margins, washes, roadsides, ditches, flats, sand dunes, and desert springs. It grows best in an alkaline soil, but tolerates salinity and acidity. Mature plants can survive desert heat, below-freezing temperatures, periodic flooding, drought, and burning. The plants reproduce by seed and sometimes vegetatively from root sprouts and stem fragments, and can grow to 2,625 feet in elevation (DiTomaso and Healy 2007).

Control

- Prevention: Sites with intact native riparian vegetation are resistant to tamarisk invasion because the seedlings are poor competitors. Minimizing impacts in riparian and desert wash habitats and restoring any necessary impacts with native vegetation will thus reduce the potential for tamarisk invasion into new areas.
- Mechanical: Trees cut from the soil surface re-sprout from the root system. Aboveground tree removal should be followed with herbicidal methods as outlined below; otherwise, the root system will need to be manually removed, which may cause more soil disturbance than necessary and leave the site open to new invasions. Seedlings and small plants must be removed during the first year after removal of mature plants, which are easily removed by hand (DiTomaso and Healy 2007).
- Fire Management: Burning is not recommended because plants re-sprout readily following fire.

- **Cultural:** Mature saltcedar is vulnerable when shaded and, if possible, saltcedar-susceptible sites should be revegetated with native trees to discourage its reestablishment (Zouhar 2003). However, because many sites near dams, diversions, groundwater pumping, and development have resulted in reduced soil moisture, increased depth to the water table, and increased soil salinity, planting native trees may not be feasible. In these cases, salt-tolerant grasses may be more appropriate for revegetation.
- **Biocontrol:** In 2002, the saltcedar beetle (*Diorhabda elongata*) was released in efforts to control tamarisk, but it is not yet known how effective the species will be in control of saltcedar (DiTomaso and Healy 2007).
- **Herbicide:** Cut stumps should be painted with an herbicide preparation specifically approved for use in aquatic and wetland ecosystems in California. Care should be taken to use a strong enough application to kill the root crown bud. Repeat applications are required the following year when seedlings germinate in the spring. Young plants are easily scraped with a Hula Hoe or pulled by hand.

2.2.2 Moderate Risk Noxious Weed Species

These species have clear impacts on physical processes, plant and animal communities, and vegetation structure of the communities in which they establish, but impacts are less severe than the species listed as high risk. They generally experience moderate to high dispersal rates, with their establishment success dependent on ecological disturbance. Ecological amplitude and distribution may range from restricted to extensive.

Eupatory (*Ageratina adenophora*)

Status

Cal-IPC Inventory Rating: Moderate

CDFA Pest Rating: Unrated

Observed within Survey Area: No, not observed during the surveys. However, it is known to be within the Project's vicinity and is considered likely to invade or colonize areas disturbed by construction or other ground-disturbing activities.

Ecology

Eupatory is a perennial herb or small shrub in the Sunflower Family (*Asteraceae*). Eupatory is found along the coast of California and in the South Coast and Transverse Ranges up to 970 feet in elevation (Cal-IPC 2008). This species prefers disturbed areas, coastal canyons, riparian areas and scrub, and is especially invasive in mild coastal areas (Cal-IPC 2008). Eupatory was originally introduced to California as an ornamental plant, but the species escaped from cultivation by producing abundant seed that is dispersed via wind, water, soil movement, and by clinging to animals and people (Cal-IPC 2008).

Control

- **Mechanical:** Small infestations can be controlled by hand-pulling plants, as long as care is taken to remove the crown and rootsock as well, which can cause the growth of new shoots if not removed (DiTomaso and Healy 2007).
- **Fire Management:** Prescribed burns are not recommended unless the burned area will be revegetated. Openings of bare ground may encourage germination and establishment of eupatory (DiTomaso and Healy 2007).
- **Biocontrol:** Stem-gall flies (*Procecidochares utilis*) have been successfully used to control eupatory (Kluge 1991). By repeating treatment enough to restrict vegetative and reproductive development through the formation of galls by the larvae, the plants can eventually be killed. This has been

found to be less successful in damp habitats, but was a highly successful treatment method in Hawaii.

Tree-of-heaven (*Ailanthus altissima*)

Status

Cal-IPC Inventory Rating: Moderate

CDFA Pest Rating: C

Observed within Survey Area: No, not observed during the 2008 weed surveys. However, it is known to be within the Project's vicinity and is considered likely to invade or colonize areas disturbed by construction or other ground-disturbing activities.

Ecology

Tree-of-heaven is a deciduous flowering tree of the Quassia Family (*Simaroubaceae*). It is widely distributed in coastal and interior California up to 4,100 feet in elevation, and is especially abundant along streams and in other moist habitats. Tree-of-heaven spreads rapidly from root sprouts and also reproduces from its abundantly produced wind-blown seeds (Hunter 2000). Root suckering can spread one individual over an area of one acre or larger, and a single tree can produce over one million seeds in a year (Hunter 2000). Tree-of-heaven spreads rapidly in riparian and other wetland sites, crowding out native vegetation. Once established, it persists for many years.

Control

- Prevention: While it is difficult to prevent initial colonization by seeds, which may enter an area through wind dispersal, the main method of reproduction in California is by vegetative reproduction. Slash piles created after cutting tree-of-heaven to control infestations should be burned or periodically rechecked to pull new saplings that can establish from cut stem fragments.
- Mechanical: Stems should be cut to remove all vegetative tissue in late spring to cause the most stress to plants, which will re-sprout from the cut stem as well as produce new individuals through root suckering. Young saplings can be hand-pulled, when the soil is moist, in an attempt to remove the taproot, but this will not work in older, larger individuals. Cut stems will require repeated treatments over a period of at least two years to completely exhaust the resources needed to re-sprout or produce suckers. Do not girdle trees as this encourages extensive suckering from the root system. Immediate treatment of cut stumps as described below is most effective in prevention of re-sprouts.
- Fire Management: Fire is mostly ineffective in controlling against tree-of-heaven infestations, but may be useful for spot treatments, although tree-of-heaven may re-sprout after heat-girdling from burns (Howard 2004). Fire management is not recommended because of this threat of causing new sprouting, particularly with the influx of nutrients that occurs after fires.
- Biocontrol: Tree-of-heaven is generally resistant to insect damage, and is even cultivated for use in silk production. Grazing is ineffective, and wildlife do not typically browse new shoots.
- Herbicide: Immediately following the late spring stem cut, apply a 50% solution of glyphosate to the cut wounds using a paintbrush, taking care to protect native vegetation from the herbicide. Application in the late spring coincides with the most effective time to cut, and has the added benefit of being readily translocated to the root system at this time of year (Holloran et al. 2004; DiTomaso and Healy 2007).

Slender Wild Oat/Wild Oat (*Avena barbata*)/(*Avena fatua*)

Status

Cal-IPC Inventory Rating: Moderate

CDFA Pest Rating: Unrated

Observed within Survey Area: Yes, both observed on Alternatives 2, 2a, and 3, the reconductoring corridor and the new 230 kV conductor corridor.

Ecology

Slender wild oat is a winter annual grass (*Poaceae*) that grows in nearly every grassland area of California. It does well in sandy and poor soils, often on the road verges. It is one of the annual grasses that was introduced as a forage species and has replaced the native perennial grasses (Cal-IPC 2008). The plant reproduces by seed. Preferred habitats include grassland, oak-savannah, fields, roadsides, pastures, crop fields, previously cultivated fields, orchards, vineyards, gardens, and other disturbed places. Slender wild oat grows to 3,940 feet in elevation (DiTomaso and Healy 2007).

Control

- **Mechanical:** Pull, hoe, or dig out wild oat in the early spring when the plants are still small and have not set seed, as seeds can remain dormant for up to ten years in the soil once fallen (ESNERR 2000). Solarization and mulching can suppress seedling germination if necessary.
- **Fire Management:** Multiple burn treatments have been found to reduce abundance of *Avena*, but these can result in increases in non-native forb species (Parsons and Stohlgren 1989).
- **Cultural:** A thick layer of mulch can be used to suppress establishment of these species on non-crop and agricultural sites (DiTomaso and Healy 2007). Contrarily, cultivation and soil disturbance may stimulate their growth.
- **Herbicide:** It is recommended that a pre-emergence product containing EPTC, oryzalin, or trifluralin is used in the fall (ESNERR 2000). For grasses growing among broad-leaved plants, selective post-emergence herbicides containing fluazifop-butyl or sethoxydim can be used. Nonselective herbicides containing glyphosate or glufosinate-ammonium will also kill wild oat.

Ripgut Brome (*Bromus diandrus*)

Status

Cal-IPC Inventory Rating: Moderate

CDFA Pest Rating: Unrated

Observed within Survey Area: Yes, observed on Alternatives 2 and 2a, the reconductoring corridor and the new 230 kV conductor corridor.

Ecology

Ripgut brome grows in open disturbed areas, roadsides, fields, ranges, and agronomic crops, orchards, forestry sites, and many natural plant communities in California and elsewhere at elevations up to 6,560 feet. It grows in most soil types (DiTomaso and Healy 2007). Ripgut brome competes with other plants for water and nutrients, often establishes dense stands, and hosts various plant diseases; however, it generally does not form exclusionary monocultures. It has high water use efficiency to allow late season growth, and it produces abundant potential fuel which can increase frequency or severity of fires (Cal-IPC 2008). Ripgut brome spreads in desert scrubland, as well as the pinyon pine-juniper communities and three-needle pine woodlands. Since the species is highly flammable when dry and is currently increasing the frequency and spread of wildfires in certain communities, it is contributing to the conversion of desert woodlands and scrublands into annual grassland. The species can be good livestock forage only while immature, but prevents establishment of alternate forage grasses (DiTomaso and Healy 2007).

Control

- **Prevention:** Proper stocking levels and the protection of soil resources are the best known land management practices preventing the establishment and spread of cool-season annual grasses in

California. However, preventing the spread or eradicating these grasses is difficult. The majority of grasslands within the state are now dominated by these and other exotic annual grasses.

- Mechanical: Few mechanical methods are suitable or effective in annual *Bromus* control. Precisely timed mowing, after the grass has begun to flower but before it has produced mature seeds (a period of about a week), can help reduce the amount of seed produced each year. In agricultural areas, intensive or deep tilling can help eradicate infestations.
- Fire Management: Burning tends to promote the establishment, growth, and spread of these grass species. Late season burns can significantly increase *Bromus* densities in subsequent years (DiTomaso and Healy 2007). Some practitioners have advocated burning sites after seed is set but before the plants shatter, which reduces the amount of viable seed. However, like other burn control methods, this appears to increase the site's susceptibility to subsequent invasions (DiTomaso and Healy 2007), and therefore is not recommended.
- Biocontrol: Overgrazing may increase the abundance of ripgut brome by reducing the abundance of more desirable species (DiTomaso and Healy 2007).
- Herbicide: No herbicidal methods are currently a good option for annual *Bromus* grass control, due to the extensive nature of many infestations. As the grasses become dominant species in the habitats they invade, targeting specific areas for eradication without affecting other co-occurring native species is difficult.

Tocalote (*Centaurea melitensis*)

Status

Cal-IPC Inventory Rating: Moderate

CDFA Pest Rating: C

Observed within Survey Area: Yes, observed on Alternatives 2 and 2a and the reconductoring corridor.

Ecology

Tocalote is a yellow-flowered winter annual in the Sunflower Family (*Asteraceae*) that is widespread along roadsides and in other disturbed sites up to 7,170 feet in elevation in Southern California. Tocalote is less common in northern California. The growth pattern of tocalote is somewhat similar to yellow star-thistle, but flowering occurs earlier in the year. Tocalote produces a rosette in the early part of the growing season, then bolts and flowers in late spring or early summer. Tocalote reproduces only from seed, and individual plants can produce as many as 60,000 seeds (DiTomaso and Gerlach 2000).

Although tocalote can displace natives and adversely impact rare plants in coastal areas, adverse ecological impacts from tocalote infestation have not been reported for montane habitats in California.

Control

- Prevention: When working in areas infested with tocalote, equipment (including undercarriages) should be carefully cleaned before moving to a non-infested area. The collection and export of fill soils, pasture hay, and crops from infested areas should be avoided or minimized to the maximum extent practicable.
- Mechanical: Mowing can provide effective treatment of infested areas if mowed at the correct time, which is immediately after the earliest 2% to 5% of plants have begun to produce flower heads, usually in April or early May (DiTomaso and Healy 2007). Mowing too early may cause plants to become bushier and produce more flower heads. Treatments should continue for at least two to three years, after which spot eradication may be required indefinitely.
- Fire Management: Prescribed burning of tocalote can reduce populations if timed correctly, but to avoid heavy damage to native vegetation, burns should be timed to occur after other annual plants have dried but before tocalote seeds are produced. Due to its late spring-early summer flowering

period, burning may be difficult to implement for tocalote. However, an experimental study showed that during three years of prescribed fires, non-native forb biomass increased 18,000% from pre-burn levels and was largely composed of tocalote, which went from non-existent in pre-burn plots to comprising 46.3% of total biomass three years later (Parsons and Stohlgren 1989), suggesting that fire management of tocalote may provide mixed results of success.

- **Cultural:** DiTomaso and Healy (2007) suggest that cultural strategies used for control of yellow star-thistle (see above) may be effective for tocalote as well.
- **Biocontrol:** Responsible rangeland management, where range is grazed by sheep, goats, or cattle to a moderate degree, can help prevent establishment or spread of populations in grasslands. Infested areas can be treated by high-intensity grazing between the period when the plant bolts (April) to just before the plant produces spiny seed heads in May/June. Biocontrol insects used to control yellow star-thistle may also feed on tocalote flower heads, but are more attracted to, and better at damaging, yellow star-thistle.
- **Herbicide:** Herbicide treatments by foliar spray or wick application are generally used to control or reduce spot infestations, or as follow-up to more intensive mechanical, grazing, or fire management-based treatments.

Bull Thistle (*Cirsium vulgare*)

Status

Cal-IPC Inventory Rating: Moderate

CDFA Pest Rating: C

Observed within Survey Area: No, not observed during the BRRTP weed surveys. However it is known to be within the Project's vicinity and is considered likely to invade or colonize areas disturbed by construction or other ground-disturbing activities.

Ecology

Bull thistle is a spiny pink-flowered biennial thistle in the Sunflower Family (*Asteraceae*) that is widespread in California in mesic coastal and montane habitats below 8,000 feet in elevation. It is common in moist grasslands, meadows and forests (Randall 2000). Bull thistle reproduces from seed, which remains viable for three years or more and is capable of wind-dispersal for distances of more than a mile. It rarely forms dense stands, but can be abundant enough to displace native plants including forage species important to native herbivores (Randall 2000).

Control

- **Prevention:** The best preventative measure is removal of small infestations as soon as possible after they are located. If mowers, vehicles, or tillage equipment are operating in an infested area, they should be thoroughly cleaned afterward to prevent the spread of the infestation (Zouhar 2002). When establishing vegetation on a site, certified weed-free seed and mulch should be used for any seedlings, and sites should be monitored several times a year, particularly in areas that are most susceptible to the spread of weeds, such as roadsides, parking lots, fencelines, and waterways.
- **Mechanical:** Bull thistle can be hand pulled prior to flowering, by bending the stem and pulling. Use a pick to loosen hard soil and pull the taproot. Bull thistle can also be cut or mowed shortly before flowering (DiTomaso and Healy 2007). Cut the stem a minimum of one to two inches below the ground with a shovel. If mowing, cut close to the ground just before flowering. A follow up mowing one month later is often needed (Holloran et al. 2004). Stems can be left to decompose on-site, although flower heads should be removed. Cut flower heads should be bagged, as they may still produce viable seed (Bossard et al. 2000; DiTomaso and Healy 2007; Holloran et al. 2004).
- **Cultural:** Cultivation before flowering can help to control bull thistle infestations (DiTomaso and Healy 2007). Sites where bull thistle has been pulled from the ground should be revegetated with

desired plants to provide competition in the event that there are still bull thistle seeds left in the soil (Zouhar 2002).

- **Biocontrol:** The USDA has approved two insect species for bull thistle control in California, although neither has been successful. *Rhinocyllus conicus* is a weevil that attacks *Cirsium*, *Carduus*, and *Silybum* species; however, it has also been known to attack native *Cirsium* species. *Urophora stylata* is a gall-forming fruit fly that may be useful in coastal sites (Bossard et al. 2000).
- **Herbicide:** Autumn or spring application of 2,4-D at 0.5 kg/ha is recommended to control rosettes (Bossard et al. 2000). Other appropriate herbicides for the control of bull thistle are clopyralid, dicamba, MCPA, picloram, metsulfuron, and chlorsulfuron (Zouhar 2002), although herbicide use may also affect non-target plant species as well.

Artichoke Thistle (*Cynara cardunculus*)

Status

Cal-IPC Inventory Rating: Moderate

CDFA Pest Rating: B

Observed within Survey Area: No, not observed during the surveys, but is known to be within the Project's vicinity and is considered likely to invade or colonize areas disturbed by construction or other ground-disturbing activities.

Ecology

Artichoke thistle is a perennial thistle in the Sunflower Family (*Asteraceae*) which blooms from April to July. This is a large thistle that is closely related to cultivated artichokes and can grow to nine feet tall (DiTomaso and Healy 2007). This species is found throughout California with an elevation range up to 1,600 feet in elevation (Cal-IPC 2008). Artichoke thistle likes disturbed open sites, preferring habitats such as grassland, chaparral, coastal scrub and riparian areas. This species is sometimes grown as an ornamental plant. This species will reproduce by seed and sometimes re-sprout from root fragments (Cal-IPC 2008).

Control

- **Mechanical:** In small or scattered populations, grubbing may be a practical deterrent if the taproot is removed or the seedhead is cut and removed (Kelly 2000). Methods such as disking or plowing are not recommended because it not only requires several years to effectively eliminate the plant from the area, but because the root reaches up to eight feet in depth and the soil disturbance makes it possible for further infestation to occur. Flower stems should be cut before maturity to reduce seed production (DiTomaso and Healy 2007).
- **Fire Management:** Prescribed burns would help remove the aboveground biomass of the plant, possibly killing the surface layer of the seedbank and making chemical control methods more effective. Plants in burned areas should be chemically treated four to six weeks after they resprout. Burning will not kill the taproot of the plants (DiTomaso and Healy 2007).
- **Cultural:** Repeated cultivation may eventually eliminate artichoke thistle populations (DiTomaso and Healy 2007).
- **Biocontrol:** Invertebrates such as earwigs, ants and other aphids, harlequin beetles, and bees feed on artichoke thistle. Although there are no USDA-approved biocontrol agents for this plant, the exotic Mediterranean Basin-based artichoke fly (*Terellia fuscicornis*) feeds on flowers and seedheads. Wildlife do not cause a significant impact to artichoke thistle populations, although DiTomaso and Healy (2007) report that browsing by goats may reduce seed production.
- **Herbicide:** The "cut-stump" method has been reported as being effective against artichoke thistle populations. The cut-stump method involves cutting the plant as close to the base as possible and applying a solution of 25 percent glyphosate (Roundup®) to the stump. Mature, bolting plants can

be killed with a two percent glyphosate solution with a 95% to 98% success rate. This is also effective on plants that have gone to seed and on seedlings, but not usually in the earlier stages of growth before the plant sends up a flower stalk, likely because in pre-bolting plants the movement of fluids is greater towards the leaves and stems, and lesser towards the roots. Using power tools or tractors to cut down the plants increases the effectiveness of chemical treatment. The herbicide Clopyrliid (Transline®) can be effective when applied during the rosette stage, but less effective on mature, bolting plants.

Shortpod Mustard (*Hirschfeldia incana*)

Status

Cal-IPC Inventory Rating: Moderate

CDFA Pest Rating: Unrated

Observed within Survey Area: Yes, observed on Alternatives 2 and 2a and the reconductoring corridor.

Ecology

Shortpod mustard is a biennial or short-lived perennial forb in the Mustard Family (*Brassicaceae*) that reproduces by high seed production. It is native to the Mediterranean region and is becoming an increasing problem in wildlands of Southern California (Cal-IPC 2008). It blooms from May to October up to 5,250 feet in elevation; habitat includes disturbed areas, roadsides, fields, pastures, agronomic crops, orchards, vineyards, ditch banks, and dry washes (DiTomaso and Healy 2007).

Control

- Prevention: Disturbance and fire favor establishment of mustard species. Additionally, shortpod mustard may be more likely to invade areas already dominated by annual grasses (Brooks 2004). Therefore, protection and sound management of remaining bunchgrass grasslands and quick eradication of initial infestations in scrub- or woodlands is recommended.
- Mechanical: Black and shortpod mustard are best controlled mechanically by hand-pulling of plants each year after they have bolted but before they produce seed. The plants have a fairly weak root system, and as annuals, do not re-sprout from root fragments left in the soil. Over time, this can deplete the seed banks and allow native or grassy vegetation to dominate previously infested areas (DiTomaso and Healy 2007). Mowing, particularly when timing is poor, can produce plants that branch heavily from the base, and could produce even more seed than undisturbed plants.
- Fire Management: Burning is not recommended for shortpod mustard control as it can damage co-occurring native vegetation due to heavy fuel loads, as well as the fact that shortpod and other exotic mustard species appear to be somewhat fire-adapted and can increase in density following fires.
- Herbicide: Because early season mustards such as these emerge early in the growing season, often before native vegetation has broken dormancy, it is thought that early post-emergence herbicidal treatments may be effective for members of this group (Bossard et al. 2000), but more research is needed to develop a standardized, optimized methodology for control of these species.

Tree Tobacco (*Nicotiana glauca*)

Status

Cal-IPC Inventory Rating: Moderate

CDFA Pest Rating: Unrated

Observed within Survey Area: No, not observed during the surveys, but is known to be within the Project's vicinity and is considered likely to invade or colonize areas disturbed by construction or other ground-disturbing activities.

Ecology

Tree tobacco is a tree/shrub in the Nightshade Family (*Solanaceae*), which grows up to 10 to 20 feet in height, and is short-lived. Tree tobacco was introduced to California about 100 years ago and is found growing up to 5,000 feet in elevation in disturbed soils, vacant lots, along roadsides, streamsides, and riparian areas (Cal-IPC 2008). All plant parts contain the alkaloid anabasine and are highly toxic to humans and livestock when ingested. The plant flowers from March to November and reproduces by seed. It grows throughout California, including the southwestern region and in deserts up to 3,610 feet in elevation (DiTomaso and Healy 2007).

Control

- **Prevention:** In Australia, it has been observed that stem densities are significantly reduced in non-grazed plots, possibly due to the competition from native wetland vegetation (Florentine and Westbrooke 2005). As wetland areas are often grazed heavily by livestock in arid areas, protection of native emergent wetland vegetation by excluding livestock from sensitive areas may prevent seedling establishment or spread of existing infestations.
- **Mechanical:** No mechanical methods of control other than hand-pulling are known, although cutting before herbicide application is an accepted control method for many weedy, woody species.
- **Herbicide:** Optimal methods for control are still being developed, but glyphosate applied as foliar spray, drizzle, or as a treatment to cut-stumps all showed high levels of initial success when applied in fall (Oneto et al. 2004), although later regrowth was not assessed and other timing regimes were not compared in the 2004 publication.

Tumble mustard (*Sisymbrium altissimum*)

Status

Cal-IPC Inventory Rating: Unrated

CDFA Pest Rating: Unrated

Observed within Survey Area: Yes, observed on Alternatives 1, 2, and 2a, the reconductoring corridor, and the new circuit corridor.

Ecology

Tumble mustard is a winter annual or biennial in the Mustard Family (*Brassicaceae*) that is widespread throughout most California counties (Howard 2003, Calflora 2011). It easily grows in many soil types, including loose to compact soils, and on sand, disturbed roadsides, and in fields (Hickman 1993, Howard 2003). Some of the more common vegetation types that it can be found in include sagebrush, salt-desert shrubland, and pinyon-juniper communities (Howard 2003). In California, it is known to occur at elevations below 8,200 feet and typically flowers between March and April (Howard 2003). It is an important source of food for many types of livestock, game, small mammals, and birds, especially in its early stages before seeding (Howard 2003). Because tumble mustard is an early seral species, in late seral stages of vegetation communities it may be excluded by increasing canopy closure, ground litter, or increased competition from late-successional species (Howard 2003).

Control

- **Prevention:** Establishment of tumble mustard can be minimized or prevented by minimizing soil disturbance and seed dispersal and keeping a high native species cover (Howard 2003).
- **Mechanical:** Manually removing rosettes in the fall or early spring can control small infestations (Howard 2003).
- **Fire:** Fire has not been demonstrated to be an effective control method for tumble mustard, and it may instead increase in abundance in the early postfire community if other species are slow to establish on the open ground (Howard 2003).

- **Biocontrol:** Native and introduced slugs have been shown in trials to have an affinity for tumble mustard over 18 other early successional species (Howard 2003).
- **Herbicide:** Herbicides can be effective in helping to control populations of tumble mustard, but are not usually a long-term solution unless implemented with other methods of control and management. The most effective herbicides include 2,4-D and MCPA, although bromoxynil, atrazine, and chlorsulfon are also effective control measures (Howard 2003).

Rat-tail Fescue (*Vulpia myuros*)

Status

Cal-IPC Inventory Rating: Moderate

CDFA Pest Rating: Unrated

Observed within Survey Area: Yes, observed on Alternatives 2 and 2a, the reconductoring corridor and the new 230 kV circuit corridor.

Ecology

Rat-tail fescue is a cool season annual in the Grass Family (*Poaceae*) found in numerous California counties. It is the one of the most widespread non-native annual grasses, having naturalized throughout much of California. It readily tolerates drought, some shade, and poor, shallow, sandy and acidic soils, and is considered to be a poor forage grass for livestock (Cal-IPC 2008). Preferred habitats include disturbed and undisturbed open areas, including dry and seasonally wet sites, roadsides, rangeland, pastures, fields, occasionally agronomic fields, grassland, slopes, washes, and open areas in many plant communities, including chaparral and open woodland. It reproduces by seed and grows to elevations of 6,560 feet (DiTomaso and Healy 2007).

Control

- **Mechanical:** Hand-pulling may reduce cover of small populations or in smaller sites such as vernal pools (Howard 2006).
- **Fire Management:** Prescribed burns in tandem with hand-pulling have been found to be effective on control of rat-tail fescue.
- **Biocontrol:** Rat-tail fescue generally thrives in areas that are heavily grazed. However, it has also been shown that timing heavy grazing to a few weeks in spring to reduce seed production and in fall to limit seedling survival can have substantial effects on controlling populations (DiTomaso and Healy 2007).
- **Herbicide:** Application of glyphosate to rat-tail fescue has been found to be effective when conducted after annual grass seedlings emerge but before native seedlings emerge (Howard 2006). Simazine has also been found to be an effective herbicide.

2.2.3 Lower Risk, Poorly Known, or Native Invasive Species

These species have minor impacts on a statewide level than either the high or moderate risk species. In some cases there is not enough information known about the species to justify an elevation into either of the other categories. They generally experience low to moderate dispersal rates, and although their ecological amplitude and distribution may be limited, these species may still be problematic on local levels.

Soft Chess (*Bromus hordeaceus*)

Status

Cal-IPC Inventory Rating: Limited

CDFA Pest Rating: Unrated

Observed within Survey Area: Yes, observed on Alternatives 2 and 2a, the reconductoring corridor and the new 230 kV circuit corridor.

Ecology

Soft chess is a cool season non-native annual grass that commonly grows throughout California at elevations up to 3,280 feet and sometimes up to 6,900 feet. It thrives on fertile or non-fertile soil and blooms from April to July. Habitats include grassland, sagebrush communities, rangeland, fields, open disturbed sites, roadsides, orchards, vineyards, and agronomic crops. It is uncommon in desert areas. Soft chess has a low forage value, but can be desirable livestock forage, both while immature and mature. However, it competes for moisture with native grasses that would provide forage later into the season (DiTomaso and Healy 2007).

Control

- Fire Management: Prescribed burns in the fall have been successful at reducing coverage in some cases (Howard 1998). Seeds are not killed until the temperature is approximately 200 degrees Fahrenheit or above.
- Biocontrol: Spring grazing may partially control soft chess infestations. Defoliation within the first week after flowering has proven effective in reducing seed formation, while removing terminal buds has been effective at preventing leaf elongation and seed production. Some studies have shown that a cessation of grazing has also caused annuals to decrease in cover relative to native perennials (Howard 1998). Yearly grazing at a moderate level combined with late summer burns every few years has also been shown to be effective at promoting establishment of native perennial grasses and the reduction in abundance of non-native annual grasses (DiTomaso and Healy 2007).

Crimson spot rockrose (*Cistus ladanifer*)

Status

Cal-IPC Inventory Rating: Unrated

CDFA Pest Rating: Unrated

Observed within Survey Area: Possibly. A species from the *Cistus* genus was identified on Alternatives 2 and 2a, and the reconductoring corridor.

Ecology

Crimson spot rockrose is a perennial non-native shrub in the Rockrose Family (*Cistaceae*) that occurs at elevations lower than 984 feet (Calflora 2011, NRCS 2011). It originated in southwestern Europe (Hickman 1993), and is present in herbaria within three California counties, including Los Angeles County (Calflora 2011). Although it can be found in disturbed areas, it is uncommon (Hickman 1993). The *Cistus* genus is composed of early successional species that are particularly adapted to fire (Bastida and Talavera 2002).

Control

There have been few studies conducted on effective control methods for crimson spot rockrose. It is possible that mechanical methods such as cutting or hand-pulling may assist in controlling populations, along with herbicide control. Because seeds of this species usually remain dormant in the absence of fire (Delgado et al. 2001), fire treatment can lead to seed germination and is not advised as a control method.

Blessed Thistle (*Cnicus benedictus*)

Status

Cal-IPC Inventory Rating: Unavailable

CDFA Pest Rating: Unrated

Observed within Survey Area: Yes, observed within the new 230 kV circuit corridor.

Ecology

Blessed thistle is a spiny-leaved non-native annual in the Sunflower Family (*Asteraceae*) that originated in Europe. It occurs sporadically on disturbed sites, in fields, and along roadsides in the North Coast Ranges, Central Valley, Central-western region, South Coast, and western Mojave Desert, to 2,625 feet in elevation (DiTomaso and Gerlach 2000).

Control

- **Prevention:** Blessed thistle is unlikely to become established in perennial pastures that are well-managed and maintained.
- **Mechanical:** Plants should be mowed just before the flower buds develop so as to prevent most of the seed production (DiTomaso and Healy 2007). Mowing earlier than this can cause the flower stems to regrow, whereas mowing after the flower heads have formed can still allow seeds to mature on the ground.
- **Biocontrol:** Grazing is not recommended, as livestock will usually graze other, more palatable plants besides blessed thistle, leaving less competition.

Filaree (*Erodium* sp.)

Status

Cal-IPC Inventory Rating: Limited

CDFA Pest Rating: Unrated

Observed within Survey Area: Yes, observed on Alternatives 2, 2a, and 3 and the reconductoring corridor.

Ecology

Filaree species are aggressive annual/biannual in the Geranium Family (*Geraniaceae*). This genus is very widespread throughout California up to 6,520 feet in elevation and is commonly found along roadsides, grasslands, fields, and semi-desert areas. It often carpets large areas, out-competing native grasses and forbs (Cal-IPC 2008). Filaree species reproduce by seed. Most seeds are dispersed a short distance by explosive pods from the parent plant, but some seeds can disperse greater distances by clinging to animals and humans (DiTomaso and Healy 2007).

Control

- **Fire Management:** Prescribed burns can cause density to decrease, but biomass to increase during the first post-fire season (Howard 1992). However, after several years, filaree may decrease in size substantially. Grassland fires are not recommended for control, as they may actually aid in filaree's growth by removing the mulch layer that inhibits seed germination.
- **Cultural:** Planting crops that are highly competitive with filaree, such as wheat or barley, can help reduce its growth and its potential seed production (NBII & ISSG 2005).
- **Herbicide:** Filaree should be treated as early as possible, though chemical control is often unsatisfactory.

Prickly Lettuce (*Lactuca serriola*)

Status

Cal-IPC Inventory Rating: No List

CDFA Pest Rating: Unrated

Observed within Survey Area: Yes, observed on Alternatives 2 and 2a and the reconductoring corridor.

Ecology

Prickly lettuce is an erect winter or summer annual, sometimes biennial, in the Sunflower Family (*Asteraceae*). It blooms from April to October and reproduces by seed. It is native to Europe, and a prolific colonizer of disturbed habitats throughout California up to 6,562 feet in elevation. Prickly lettuce prefers annual grasslands, roadsides, seasonal wetlands, waste places, ditch banks, fields, agronomic and vegetable crops, orchards, vineyards, landscaped areas, and urban places (DiTomaso and Healy 2007).

Control

- Mechanical: It is recommended that prickly lettuce be removed by pulling or hoeing the seedlings and mature plants before setting seed (ESNERR 2000; DiTomaso and Healy 2007).
- Fire Management: Prescribed burns are not recommended to eliminate prickly lettuce, and may actually lead to its proliferation. A prescribed fire experiment found that prickly lettuce, which had not been present in the burned area before the fire, was carried by the wind and became established in high numbers within two years after the fire (Lyon 1966). Another study found that after a three-year period, prickly lettuce was found in highest abundance in sites which were prescribed high-intensity burns, over those which were unburned or which received low-intensity burns (Gucker 2005).
- Herbicide: Pre-emergence herbicides containing isoxaben or post-emergence herbicides containing glufosinate-ammonium or glyphosate are recommended (ESNERR 2000).

Perennial Sweet Pea (*Lathyrus latifolius*)

Status

Cal-IPC Inventory Rating: Not Available

CDFA Pest Rating: Unrated

Observed within Survey Area: No, not observed during the surveys, but is known to be within the Project's vicinity and is considered likely to invade or colonize areas disturbed by construction or other ground-disturbing activities.

Ecology

Perennial sweet pea is a glabrous perennial vine in the *Fabaceae* family. It is a garden ornamental that escaped cultivation in many areas of California. Preferred habitat includes roadsides, riparian areas, cereal crops, orchards, vineyards, and other disturbed places up to 6,560 feet in elevation. The plants are often vigorous and can form dense colonies, excluding native vegetation. Reproduction is by both seed and rhizome-like roots (DiTomaso and Healy 2007).

Control

- Mechanical: Perennial sweet pea can be controlled by cultivation, close mowing, or manual removal of stems before plants can set seed (DiTomaso and Healy 2007).

White Horehound (*Marrubium vulgare*)

Status

Cal-IPC Inventory Rating: Limited

CDFA Pest Rating: Unrated

Observed within Survey Area: Yes, observed on Alternatives 2 and 2a, the reconductoring corridor and the new 230 kV circuit corridor.

Ecology

White horehound is an aromatic, cool-season perennial shrub/forb/herb in the mint family (*Lamiaceae*). This plant is native to Eurasia and is found heavily populating disturbed places throughout California in grasslands scrub and riparian areas up to 1,950 feet in elevation. It has mostly minor impact on native species (Cal-IPC 2008). White horehound is sometimes especially common in overgrazed areas; other preferred habitats include fields, roadsides, rangeland, disturbed natural areas, waste places, ditches, and other disturbed places. It most often grows in dry places, but does not grow in deserts. The plant flowers in spring/summer and reproduces by seed (DiTomaso and Healy 2007).

Control

- **Prevention:** The best preventative measure is removal of small infestations as soon as possible after they are located before they set seed.
- **Mechanical:** White horehound can be controlled through manual removal or cultivation; however, partially buried plants can survive.
- **Fire Management:** Burning can kill mature plants, but is known to stimulate seed germination for the following season.
- **Biocontrol:** The governments of Australia and Tasmania are experimenting with the horehound plume moth (*Wheeleria spilodactylus*) as a control agent (DPIW 2008). Sheep have also been used in the Monterey Bay area to control this species (ESNERR 2000).
- **Herbicide:** In Australia and Tasmania, Dicamba, MCPA amine, trichlopyr and 2,4-D are used to treat white horehound for spot spraying, repeat treatments, and aerial applications (NRMB 2008). Herbicide treatments are applied while the plants are actively growing. A surfactant must be added to assure wetting of the leaf surface. This species can take between 6 and 20 weeks show herbicide effects.

Yellow Sweetclover (*Melilotus officinalis*)

Status

Cal-IPC Inventory Rating: No List

CDFA Pest Rating: Unrated

Observed within Survey Area: Yes, observed on Alternatives 2 and 2a and the reconductoring corridor.

Ecology

Yellow sweetclover is a biennial herb in the Pea Family that infests roadsides and other disturbed sites throughout California up to 4,890 feet in elevation. It has racemes of yellow flowers and cross-ribbed pods and reproduces only from seed. Individual plants are capable of producing thousands of pods, each bearing one or two seeds. They form dense monocultures in disturbed or open sites, but appear to be mainly early successional species that are rapidly displaced by late successional vegetation. Yellow sweetclover has been cultivated in the United States for use by livestock since at least 1856. Their nutritional properties are nearly as good as alfalfa, and they are fed to all classes of livestock. Documentation of significant ecosystem impacts from this species is lacking (Whitson [ed.] 2004).

Control

- **Mechanical:** Mowing or clipping plants in the summer will help control them as they flower, while hand pulling has also been shown to be successful in controlling small outbreaks (Tu et al. 2001).
- **Fire Management:** Prescribed burns should be carried out over two years to be most effective. Plants will increase in abundance during the first post-fire year, and should be burned again in late spring to kill the plants before they flower and set seeds. Burning during the dormant season may stimulate germination, and should be used in tandem with mechanical methods during the following summer.

- **Cultural:** Mulching has been found to be more effective than fire management methods.
- **Biocontrol:** Known pests to yellow sweetclover include sweetclover weevil (*Sitona cylindricollis*), grasshoppers, and cutworms (Sullivan 1992).
- **Herbicide:** The Nature Conservancy has used glyphosate to successfully control yellow sweetclover (Tu et al. 2001). Yellow sweetclover has been found to be susceptible to 2,4-D, dicamba, tordon, aflon, nevuron, and dalapon (Sullivan 1992).

Smilo grass (*Piptatherum miliaceum*)

Status

Cal-IPC Inventory Rating: Limited

CDFA Pest Rating: Unrated

Observed within Survey Area: Yes, observed on Alternatives 1 and 2a.

Ecology

Smilo grass is a perennial grass in the *Poaceae* Family that was introduced from the Mediterranean region (Calflora 2011). It occurs in dry or moist disturbed areas, especially along roadsides or in ditches, at elevations below 984 feet, and has been found in many counties in California (Calflora 2011, Cal-IPC 2011). Its presence has appeared to be increasing recently in riparian areas in Southern California (Cal-IPC 2011). It has been documented occurring in riparian areas, chaparral, coastal scrub, bare ground, oak woodlands, and other disturbed areas.

Control

There are currently no specific prescribed methods for controlling populations of smilo grass. Mechanical or herbicidal removal may prove effective, as may other methods of control for perennial grass species.

Rabbit Foot Grass (*Polypogon monspeliensis*)

Status

Cal-IPC Inventory Rating: Limited

CDFA Pest Rating: Unrated

Observed within Survey Area: No, not observed during the surveys, but is known to be within the Project's vicinity and is considered likely to invade or colonize areas disturbed by construction or other ground-disturbing activities.

Ecology

Rabbit foot grass is a winter or summer annual tufted grass in the *Poaceae* Family that can form dense stands in some areas of California. It is common in moist to wet areas (Cal-IPC 2008). Plants sometimes spread by stolons and appear to be perennial. Preferred habitats include moist to wet places, stream and pond margins, seasonally wet sites, ditches, pastures, and agricultural fields, moist sites in orchards and vineyards, and roadsides. Rabbit foot grass reproduces by seed and is common throughout California up to 6,890 feet in elevation (DiTomaso and Healy 2007).

Control

- **Mechanical:** Hand-pulling may reduce cover of small populations or in smaller sites, such as vernal pools (Howard 2006).
- **Cultural:** A research study has shown that rabbit foot grass may be able to controlled through the artificial elevation of soil salinity (Kuhn and Zedler 1997). The experiment demonstrated that a salt application of approximately 850 grams per square meter every month for three months was a sufficient amount to control the plant.

- **Herbicide:** A study in Arizona has suggested that rabbit foot grass may be controlled with Norflurazon (Zorial 5G®), showing a 66 – 85% success rate in controlling the plant in experimental plots (Knowles, et al. 1997).

Black Locust (*Robinia pseudoacacia*)

Status

Cal-IPC Inventory Rating: Limited

CDFA Pest Rating: Unrated

Observed within Survey Area: Yes observed along the new 230 kV circuit corridor.

Ecology

Black locust is a deciduous flowering tree in the Pea Family (*Fabaceae*). It is widely distributed in coastal and interior California, and is especially abundant along streams and in other moist habitats up to 6,190 feet in elevation. Black locust reproduces mainly by root suckering and stump sprouting, forming groves of trees connected by a common fibrous root system (Weiseler 1998). Black locust spreads rapidly in riparian areas as well as upland sites, shading out lower-growing native vegetation. Trees within a single grove are likely to be genetically identical. Physical damage to roots and stems encourages suckering and sprouting. Abundant seeds are produced, but these seldom germinate unless scarified or are otherwise specially treated. Soaking in water is one method by which the impermeable seed coat can be treated to facilitate germination (Converse 1985). Once established, black locust groves persist for many years. Black locust is a nitrogen-fixer and its presence increases local soil nitrogen levels, a factor that often promotes the growth of other non-native plant species. Black locust is intolerant of competition with other trees (Converse 1985).

Control

- **Prevention:** To prevent black locust from spreading into new areas, wildlands should be monitored several times a year and remain relatively unaffected by new human development to the extent possible (Stone 2009).
- **Mechanical:** Black locust trees can usually be controlled through persistent mechanical treatment. Cutting or ringing the trees close to the ground will likely stimulate root sprouting, so repeatedly removing any new shoots at least two a year over a multi-period year may eventually kill the trees (DiTomaso and Healy 2007). Root sprouting can be reduced by digging out small trees and their main roots.
- **Fire Management:** Prescribed burns are not recommended, as they may stimulate root sprouting and even seed germination, resulting in the proliferation of the plants. Fire may also create conditions that favor establishment, such as the removal of competition or the deposition of nutrients into the soil.
- **Biocontrol:** Cattle and domestic goats have been effectively used to kill black locust over a period of years through repeated defoliation (Stone 2009).
- **Herbicide:** Newly-cut stumps should be immediately treated with a systemic herbicide for the most effective results, although drill-and-fill and hack-and-squirt methods can also be effective deterrents (DiTomaso and Healy 2007). Glyphosate has been shown to be an effective herbicide against black locust (Stone 2009).

Russian Thistle (*Salsola tragus*)

Status

Cal-IPC Inventory Rating: Limited

CDFA Pest Rating: C

Observed within Survey Area: Yes, observed on Alternatives 1, 2, and the new 230 kV conductor corridor.

Ecology

Russian thistle is a large, bushy summer annual in the Goosefoot Family (*Chenopodiaceae*). It can be found throughout California, including agricultural areas, deserts, roadsides and other disturbed areas to 8,800 feet in elevation. Russian thistle can impede traffic and create fire hazards, and is a host of the beet leaf-hopper, an agricultural insect pest (Cal-IPC 2008). It reproduces by seed, which disperses when the plant turns into a "tumbleweed" and tumbles with the wind (DiTomaso and Healy 2007).

Control

- **Mechanical:** Young plants should be pulled or hoed before they can set seed, while older plants should be hoed just below ground level before setting seed (ESNERR 2000). Seedlings can be cut just above the cotyledons to prevent seed production and control infestations, but this must be continued until the seedbank is depleted, typically within two years for Russian thistle (DiTomaso and Healy 2007). Repeated mowing can also be an effective control method.
- **Cultural:** Soil solarization and mulching are recommended control methods.
- **Biocontrol:** Initial tests of insects to control the spread of Russian thistle have begun, but results are as yet inconclusive (Howard 1992). Livestock will generally eat Russian thistle from early spring until flowering, and again during winter when rainfall softens the sharp spines that have formed.
- **Herbicide:** For pre-emergence treatments, use an herbicide containing trifluralin. For post-emergence, non-selective herbicidal soap works best on young plants, while herbicides with dicamba are useful for mature plants. Other herbicides that are effective on Russian thistle are those containing glufosinate-ammonium, 2,4-D, dicamba, picloram, or glyphosate (ESNERR 2000).

Mediterranean Grass (*Schismus barbatus*)

Status

Cal-IPC Inventory Rating: Limited

CDFA Pest Rating: Unrated

Observed within Survey Area: Yes, observed on Alternative 3.

Ecology

Mediterranean grass is a low, tufted annual grass (*Poaceae*) found in central and Southern California, particularly in disturbed areas and deserts. They contribute to the conversion of desert shrubland into annual grassland by carrying fire across open areas, where they ignite and kill native shrubs (Cal-IPC 2008). The plant reproduces by seed and grows in the southwestern region, including deserts up to 3,940 feet in elevation. It prefers open, disturbed and undisturbed areas, roadsides, desert and semi-desert shrubland, dry river beds, mud flats, and waste places (DiTomaso and Healy 2007).

Control

- **Mechanical:** Soil disturbance contributes to the proliferation of *Schismus* species, and should be avoided to the extent possible during plant removal. Hand removal is possible, but difficult due to the small size of the plants. Plowing, disking, or scraping may aid in the reduction of surface biomass, but may eventually contribute to further growth if extensive disturbance occurs (Brooks 2000).
- **Fire Management:** Prescribed burns are generally counterproductive to controlling Mediterranean grass. Seeds are usually either near or beneath the ground level, and are unaffected by above-ground temperatures unless there is intense burning, such as under perennial shrubs. Due to the lack

of post-fire competition and, in some cases, increase in soil nutrients, Mediterranean grass can dominate a community until other plants become reestablished.

- **Biocontrol:** There are no approved insects or fungi for controlling Mediterranean grass, although ants will harvest seeds from the inflorescence. While a black smut, *Ustilago aegyptica*, has been found to destroy the spikelets of Mediterranean grass, it does not appear to be naturally widespread enough to cause noticeable changes in the distribution of the species. Artificial application may provide acceptable control results. Moderate and intense grazing can cause increases in the amount of Mediterranean grass, as it causes soil disturbance and eliminates shrub cover.
- **Herbicide:** Various herbicides, such as glyphosate, are effective in controlling Mediterranean grass. However, due to the plant's small surface area, the use of herbicides brings the risk of affecting non-target species.

Sowthistle (*Sonchus* spp.)

Status

Cal-IPC Inventory Rating: Limited

CDFA Pest Rating: A (*Sonchus arvensis*), unrated (*S. asper*, *S. oleraceus*)

Observed within Survey Area: No, not observed during the surveys, but is known to be within the Project's vicinity and is considered likely to invade or colonize areas disturbed by construction or other ground-disturbing activities.

Ecology

There are three species of sowthistle listed in *Weeds of California and Other Western States*: two annuals, spiny sowthistle (*Sonchus asper*), which was observed during invasive species surveys, and annual sowthistle (*Sonchus oleraceus*); and one perennial, perennial sowthistle (*Sonchus arvensis*). These species are members of the Sunflower Family (*Asteraceae*). Both annual species are winter or summer annuals, with flowers that develop in the spring or summer (DiTomaso and Healy 2007). Their habitats include roadsides, fields, pastures, riparian areas, ditches, logged areas in forests, and other disturbed sites. Spiny sowthistle is common throughout California up to 6,194 feet in elevation and annual sowthistle is abundant throughout California (DiTomaso and Healy 2007). They reproduce by seed, which are reported to survive up to eight years. Perennial sowthistle is a noxious perennial, which has been eradicated from the Sacramento Valley, northern South Coast Ranges, and South Coast (DiTomaso and Healy 2007). Seeds germinate in the spring and disperse seeds 10 days after the flowers open (DiTomaso and Healy 2007). Under favorable conditions, perennial sowthistle can develop new plants from root fragments one centimeter long or more (DiTomaso and Healy 2007).

Control

- **Prevention:** Perennial sowthistle is most easily prevented by monitoring and detecting areas and eradicating young populations before they have a chance to mature and establish (McWilliams 2004).
- **Mechanical:** Young sowthistles should be removed while they are young, before they can flower and set seed (ESNERR 2000). Larger plants should be removed along with the taproot, if possible, because new shoots may grow from it. Seeds may still mature even after plants have been pulled. There is evidence to suggest that defoliation, or the continual removal of new leaf growth, may be an efficient method of controlling perennial sowthistle (McWilliams 2004).
- **Cultural:** Soil solarization and mulching are recommended for treatment and control of sowthistle (ESNERR 2000). It has been reported that an alfalfa or alfalfa-grass mixture that is regularly cut for hay can eliminate up to 90% of perennial sowthistle within a three-year period (McWilliams 2004).
- **Biocontrol:** There are currently no efficient biological controls that are available to use against sowthistle. There are several types of flies that have been used experimentally in Canada to control against perennial sowthistle, but it is so far unknown if these will be effective deterrents. Sheep,

cattle, and rabbits have been known to feed on surface perennial sowthistle biomass, and occasionally on roots as well.

- Herbicide: Herbicides containing isoxaben are recommended for pre-emergence treatment, while herbicidal soaps are recommended for young plants and herbicides with glyphosate are recommended for large plants (ESNERR 2000). Perennial sowthistle as a seedling is moderately susceptible to auxins like 2,4-D, 2,4-DB, and MCPA, while established populations are moderately resistant (McWilliams 2004).

3.0 RISK ASSESSMENT

Different Alternatives of BRRTP would require different types of construction. All routing Alternatives (Alternatives 1, 2, 2a and 3) would require new 230 kV towers to be built. The construction of entirely new towers would cause sufficient ground disturbance to create conditions favorable to the spread and/or establishment of noxious weeds, many of which were identified within the existing rights-of-way. The new 230 kV conductor and the reconductoring components of the Project would not require the construction of new towers. The new 230 kV conductor would involve the placement of a new 230 kV circuit on existing towers. However, with or without new transmission tower construction, construction equipment and vehicles would be accessing tower locations along existing access roads and, as necessary, newly created or reopened spur roads. Most of the access roads are dirt roads with vegetation growing on either side, which would increase the risk of noxious weed seeds and propagules being transported by equipment and personnel, even with appropriate mitigation measures.

A risk assessment for the spread and establishment of noxious weeds was made for construction sites occurring along or adjacent to the main access routes for each portion of the Project (POWER 2010). This risk was based upon soil disturbing activities, existing road conditions, and current weed presence as determined during noxious weed surveys that occurred during 2008, 2009, and 2010. The three different risk ratings (Soil Disturbance Level, Weed Species Abundance, and Overall Threat) are presented below both in table format and in a discussion for each access road of each Alternative. The access roads listed are tentative and, while it is assumed that they will provide the best access for Project construction, final construction design may require different or additional roads to be used within the ANF. Because the ANF requested that only specific "high risk" noxious weed species be mapped during surveys, most species were determined only to be present or absent along the survey corridor, and the specific location detail for noxious weeds were not recorded. For example, the three noxious weeds that were mapped in specific locations along Alternatives 2 and 2a were tocalote, artichoke thistle, and saltcedar, but this does not exclude the presence of other high risk species.

3.1 ALTERNATIVE 1

TABLE 8. POTENTIAL ACCESS ROADS IDENTIFIED FOR CONSTRUCTION OF ALTERNATIVE 1 AND WEED RISK

Access Road	Soil Disturbance Level	Weed Species Abundance	Overall Noxious Weed Threat
Forest Road 8N01	High	Medium	High
Forest Road 8N04	High	High	Medium

Forest Road 8N01

Soil Disturbance Level: High. This road would be used to access and construct new tower sites, entailing potential road grading and vegetation clearing. This has a high likelihood of creating favorable conditions for the spread of noxious weed species.

Weed Species Abundance: Medium. The presence of weeds present along this road varies from low to medium.

Overall Threat: High. The moderate to low presence of noxious weeds along this road increases the potential for new populations of noxious weeds to invade. The disturbance of soil would greatly increase opportunities for existing weeds to continue invading the area. Implementation of BMPs and mitigation measures, as mentioned in Section 1.2, would reduce the overall threat of noxious weeds along this road.

Forest Road 8N04

Soil Disturbance Level: High. This road would be used to access and construct new tower sites, entailing potential road grading and vegetation clearing. This has a high likelihood of creating favorable conditions for the spread of noxious weed species.

Weed Species Abundance: High. The presence of weeds present along this road varies from abundant to medium.

Overall Threat: Medium. The presence of abundant noxious weeds reduces the potential for new populations of noxious weeds to invade. The disturbance of soil would increase opportunities for existing weeds to continue invading the area. Implementation of BMPs and mitigation measures, as mentioned in Section 1.2, would reduce the overall threat of noxious weeds along this road.

3.2 ALTERNATIVE 2

TABLE 9. POTENTIAL ACCESS ROADS IDENTIFIED FOR CONSTRUCTION OF ALTERNATIVE 2 AND WEED RISK

Access Road	Soil Disturbance Level	Weed Species Abundance	Overall Noxious Weed Threat
Forest Road 6N21 (City Highline Road)	Medium	High	Medium
Forest Road 6N04 (Leona Divide Fire Road)	High	Low	Medium
Forest Road 7N01	High	Medium	Medium
Bee Canyon Access Road	High	High	Medium

Forest Road 6N21 (City Highline Road)

Soil Disturbance Level: Medium. This road would be used to access and construct new tower sites, entailing some road grading and vegetation clearing; however, this road is already wide enough in most places to allow large construction equipment to pass. This has a high likelihood of creating favorable conditions for the spread of noxious weed species such as slender wild oat, shortpod mustard, and the various *Bromus* species which are present throughout the area.

Weed Species Abundance: High. The most abundantly mapped vegetation community alongside this road was ruderal, followed by chamise chaparral. The presence of weeds present along this road varies from abundant on the southern half to low on the northern portion.

Overall Threat: Medium. The presence of abundant noxious weeds reduces the potential for new populations of noxious weeds to invade. The disturbance of soil would increase opportunities for existing weeds to continue invading the area. Implementation of BMPs and mitigation measures, as mentioned in Section 1.2, would reduce the overall threat of noxious weeds along this road.

Forest Road 6N04 (Leona Divide Fire Road)

Soil Disturbance Level: High. Vehicles and equipment would drive on this unpaved access road to reconductor existing towers and to clear and grade new spur roads and tower sites in dense chaparral for new transmission towers. This road may also require widening to allow equipment to pass on it, which would create further disturbance along the roadside. These activities would create conditions that are favorable for the spread of noxious weeds into new areas.

Weed Species Abundance: Low. The presence of weeds present along this road varies from low to medium.

Overall Threat: Medium. The low presence of noxious weeds increases the potential for new populations of noxious weeds to invade. The disturbance of soil would increase opportunities for existing weeds to continue invading the area. Implementation of BMPs and mitigation measures, as mentioned in Section 1.2, would reduce the overall threat of noxious weeds along this road.

Forest Road 7N01

Soil Disturbance Level: High. Vehicles and equipment would drive on this unpaved access road to reconductor existing towers and to clear and grade new spur roads and tower sites in dense chaparral for new transmission towers. This road may also require widening and grading to allow equipment to pass on it, which would create further disturbance in and along the roadside. These activities would create conditions that are favorable for the spread of noxious weeds into new areas.

Weed Species Abundance: Medium. The presence of weeds present along this road varies from abundant to low.

Overall Threat: Medium. The presence of abundant noxious weeds reduces the potential for new populations of noxious weeds to invade. The disturbance of soil would increase opportunities for existing weeds to continue invading the area. Implementation of BMPs and mitigation measures, as mentioned in Section 1.2, would reduce the overall threat of noxious weeds along this road.

Bee Canyon Access Road

Soil Disturbance Level: High. This road would be used for access to and from the ROW, entailing potential road grading and potential vegetation clearing due to the general narrowness of the road. This has a high likelihood of creating favorable conditions for the spread of noxious weed species which are present throughout the area.

Weed Species Abundance: High. The presence of weeds present along this road varies from medium to low.

Overall Threat: Medium. The presence of abundant noxious weeds reduces the potential for new populations of noxious weeds to invade. The disturbance of soil would increase opportunities for existing weeds to continue invading the area. Implementation of BMPs and mitigation measures, as mentioned in Section 1.2, would reduce the overall threat of noxious weeds along this road.

3.3 ALTERNATIVE 2A

TABLE 10. POTENTIAL ACCESS ROADS IDENTIFIED FOR CONSTRUCTION OF ALTERNATIVE 2A AND WEED RISK

Access Road	Soil Disturbance Level	Weed Species Abundance	Overall Noxious Weed Threat
Forest Road 6N21 (City Highline Road)	Medium	High	Medium
Forest Road 7N01	High	Medium	Medium
Forest Road 6N04 (Leona Divide Fire Road)	High	Low	Medium
Bee Canyon Access Road	High	High	Medium

Forest Road 6N21 (City Highline Road)

Soil Disturbance Level: Medium. This road would be used to access and construct new tower sites, entailing potential road grading and vegetation clearing; however, this road is already wide enough in most places to allow large construction equipment to pass. This has a high likelihood of creating

favorable conditions for the spread of noxious weed species such as slender wild oat, shortpod mustard, and the various *Bromus* species which are present throughout the area.

Weed Species Abundance: High. The most abundantly mapped vegetation community alongside this road was ruderal, followed by chamise chaparral. The abundance of weeds present along this road varies from abundant to low.

Overall Threat: Medium. The presence of abundant noxious weeds reduces the potential for new populations of noxious weeds to invade. The disturbance of soil would increase opportunities for existing weeds to continue invading the area. Implementation of BMPs and mitigation measures, as mentioned in Section 1.2, would reduce the overall threat of noxious weeds along this road.

Forest Road 7N01

Soil Disturbance Level: High. Vehicles and equipment would drive on this unpaved access road to reconductor existing towers and to clear and grade new spur roads and tower sites in dense chaparral for new transmission towers. This road may also require widening and grading to allow equipment to pass on it, which would create further disturbance in and along the roadside. These activities would create conditions that are favorable for the spread of noxious weeds into new areas.

Weed Species Abundance: Medium. The presence of weeds present along this road varies from abundant to low.

Overall Threat: Medium. The presence of abundant noxious weeds reduces the potential for new populations of noxious weeds to invade. The disturbance of soil would increase opportunities for existing weeds to continue invading the area. Implementation of BMPs and mitigation measures, as mentioned in Section 1.2, would reduce the overall threat of noxious weeds along this road.

Forest Road 6N04 (Leona Divide Fire Road)

Soil Disturbance Level: High. Vehicles and equipment would drive on this unpaved access road to reconductor existing towers and to clear and grade new spur roads and tower sites in dense chaparral for new transmission towers. These activities would create conditions that are favorable for the spread of noxious weeds into new areas. This road may also require widening to allow equipment to pass on it, which would create further disturbance along the roadside.

Weed Species Abundance: Low. The presence of weeds present along this road varies from medium to low.

Overall Threat: Medium. The presence of abundant noxious weeds reduces the potential for new populations of noxious weeds to invade. The disturbance of soil would increase opportunities for existing weeds to continue invading the area. Implementation of BMPs and mitigation measures, as mentioned in Section 1.2, would reduce the overall threat of noxious weeds along this road.

Bee Canyon Access Road

Soil Disturbance Level: High. This road would be used for access to and from the ROW, entailing potential road grading and potential vegetation clearing due to the general narrowness of the road. This has a high likelihood of creating favorable conditions for the spread of noxious weed species which are present throughout the area.

Weed Species Abundance: High. The presence of weeds present along this road varies from medium to low.

Overall Threat: Medium. The presence of abundant noxious weeds reduces the potential for new populations of noxious weeds to invade. The disturbance of soil would increase opportunities for existing weeds to continue invading the area. Implementation of BMPs and mitigation measures, as mentioned in Section 1.2, would reduce the overall threat of noxious weeds along this road.

3.4 ALTERNATIVE 3

TABLE 11. POTENTIAL ACCESS ROADS IDENTIFIED FOR CONSTRUCTION OF ALTERNATIVE 3 AND WEED RISK

Access Road	Soil Disturbance Level	Weed Species Abundance	Overall Noxious Weed Threat
Unnamed Access Road	High	High	Medium

Unnamed Access Road

Soil Disturbance Level: High. This road would be used to access and construct new tower sites, entailing potential road grading and vegetation clearing. This has a high likelihood of creating favorable conditions for the spread of noxious weed species.

Weed Species Abundance: High. The presence of weeds present along this road varies from abundant to medium.

Overall Threat: Medium. The presence of abundant noxious weeds reduces the potential for new populations of noxious weeds to invade. The disturbance of soil would increase opportunities for existing weeds to continue invading the area. Implementation of BMPs and mitigation measures, as mentioned in Section 1.2, would reduce the overall threat of noxious weeds along this road.

3.5 RECONDUCTORING

TABLE 12. POTENTIAL ACCESS ROADS IDENTIFIED FOR RECONDUCTORING AND WEED RISK

Access Road	Soil Disturbance Level	Weed Species Abundance	Overall Noxious Weed Threat
Forest Road 6N21 (City Highline Road)	Low	High	Low
Forest Road 7N01	High	Medium	Low
Forest Road 6N04 (Leona Divide Fire Road)	High	Medium	Low
Bee Canyon Access Road	High	High	Medium

Forest Road 6N21 (City Highline Road)

Soil Disturbance Level: Low. This road would be used to access existing tower sites. This has a low likelihood of creating favorable conditions.

Weed Species Abundance: High. The most abundantly mapped vegetation community alongside this road was ruderal, followed by chamise chaparral. The abundance of weeds present along this road varies from abundant to low.

Overall Threat: Low. The presence of abundant noxious weeds reduces the potential for new populations of noxious weeds to invade. The disturbance of soil is expected to be nominal, but would increase opportunities for existing weeds to continue invading the area. Implementation of BMPs and mitigation measures, as mentioned in Section 1.2, would reduce the overall threat of noxious weeds along this road.

Forest Road 7N01

Soil Disturbance Level: High. Vehicles and equipment would drive on this unpaved access road to reconductor existing towers. This road may also require widening and grading to allow equipment to pass on it, which would create further disturbance in and along the roadside. These activities would create conditions that are favorable for the spread of noxious weeds into new areas.

Weed Species Abundance: Medium. The presence of weeds present along this road varies from abundant to low.

Overall Threat: Low. The presence of abundant noxious weeds reduces the potential for new populations of noxious weeds to invade. Disturbance of soil is expected to be nominal, but would increase opportunities for existing weeds to continue invading the area. Implementation of BMPs and mitigation measures, as mentioned in Section 1.2, would reduce the overall threat of noxious weeds along this road.

Forest Road 6N04 (Leona Divide Fire Road)

Soil Disturbance Level: High. Vehicles and equipment would drive on this unpaved access road to reconductor existing towers. This road may also require widening to allow equipment to pass on it, which would create further disturbance along the roadside. These activities would create conditions that are favorable for the spread of noxious weeds into new areas.

Weed Species Abundance: Medium. The presence of weeds present along this road varies from abundant to medium.

Overall Threat: Low. The presence of abundant noxious weeds reduces the potential for new populations of noxious weeds to invade. The disturbance of soil is expected to be nominal, but would increase opportunities for existing weeds to continue invading the area. Implementation of BMPs and mitigation measures, as mentioned in Section 1.2, would reduce the overall threat of noxious weeds along this road.

Bee Canyon Access Road

Soil Disturbance Level: High. This road would be used for access to and from the ROW, entailing potential road grading and potential vegetation clearing due to the general narrowness of the road. This has a high likelihood of creating favorable conditions for the spread of noxious weed species which are present throughout the area.

Weed Species Abundance: High. The presence of weeds present along this road varies from medium to low.

Overall Threat: Medium. The presence of abundant noxious weeds reduces the potential for new populations of noxious weeds to invade. The disturbance of soil would increase opportunities for existing weeds to continue invading the area. Implementation of BMPs and mitigation measures, as mentioned in Section 1.2, would reduce the overall threat of noxious weeds along this road.

3.5.1 New 230 kV Conductor

TABLE 13. POTENTIAL ACCESS ROADS IDENTIFIED FOR INSTALLATION OF THE NEW 230 kV CIRCUIT AND WEED RISK

Access Road	Soil Disturbance Level	Weed Species Abundance	Overall Noxious Weed Threat
Grasshopper Fire Road	High	High	Medium
Lake Hughes Road	Low	Medium	Low

Grasshopper Fire Road

Soil Disturbance Level: High. This existing unpaved road would be used to access tower sites, entailing potential road grading and vegetation clearing. This has a low likelihood of creating favorable conditions for the spread of noxious weed species due the existing use of this road for current operation and maintenance of the line.

Weed Species Abundance: High. The presence of weeds present along this road varies from abundant to low.

Overall Threat: Medium. The presence of abundant noxious weeds reduces the potential for new populations of noxious weeds to invade. The disturbance of soil would increase opportunities for existing weeds to continue invading the area. Implementation of BMPs and mitigation measures, as mentioned in Section 1.2, would reduce the overall threat of noxious weeds along this road.

Lake Hughes Road

Soil Disturbance Level: Low. This road would be used to access spur roads to tower sites, entailing potential road grading and vegetation clearing. As this is a well-traveled paved road, it is unlikely that conditions favorable for the spread of noxious weed species would occur while it is in use for this Project.

Weed Species Abundance: Medium. The presence of weeds present along this road varies from abundant to medium.

Overall Threat: Low. The presence of abundant noxious weeds reduces the potential for new populations of noxious weeds to invade. The disturbance of soil is unlikely, but any disturbance created would increase opportunities for existing weeds to continue invading the area. Implementation of BMPs and mitigation measures, as mentioned in Section 1.2, would reduce the overall threat of noxious weeds along this road.

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5.0 LIST OF ACRONYMS

AC	Alternating Current
ACSS/AW	Aluminum Conductor Steel Supported/Aluminum-clad Steel Wire
ACSS/TW/HS	Aluminum Conductor Steel Supported/Trapezoidal Wires/High Strength
ANF	Angeles National Forest
BLM	Bureau of Land Management
BMP	Best Management Practice
BR-RIN	Barren Ridge - Rinaldi
BR RTP	Barren Ridge Renewable Transmission Project
CDFG	California Department of Fish and Game
CFR	Code of Federal Regulations
CNDDDB	California Natural Diversity Database
CNPS	California Native Plant Society
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
FR	Federal Registry
Forest Service	U.S. Department of Agriculture, Forest Service
GAP	Gap Analysis Program
GIS	Geographic Information System
kcmil	1,000 circular mills (unit of area)
kV	kilovolt
LADWP	Los Angeles Department of Water and Power
LMP	Land Management Plan
NDDDB	Natural Diversity Database
NFS	National Forest System
NFMA	National Forest Management Act
OHV	Off Highway Vehicle
PDCI	Pacific Direct Current Intertie
PP2	Power Plant #2
RCA	Riparian Conservation Area
ROW	Right-of-Way
RWQCB	Regional Water Quality Control Board
SCE	Southern California Edison
TRTP	Tehachapi Renewable Transmission Project
TSP	Tubular Steel Pole
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
WEAP	Worker Environmental Awareness Program

6.0 LIST OF PREPARERS

City of Los Angeles Department of Water and Power

Charles Holloway, Manager of Environmental Planning and Assessment

POWER Engineers, Inc.

Ken McDonald - Botanist
Vanessa Santistevan – Biologist
Ryan Winkleman – Biologist

APPENDIX K: TRACKINFO SERVICES FIRSTSEARCH REPORTS

TRACK ► INFO SERVICES, LLC

Environmental FirstSearch™ Report

Target Property:

SEGMENT A

MOJAVE CA 93501

Job Number: BRRTP-A

PREPARED FOR:

Power Engineers, Inc.

731 E Ball Road Suite 100

Anaheim, CA 92805

(949) 280-7922

09-17-10



Tel: (866) 664-9981

Fax: (818) 249-4227

***Environmental FirstSearch
Site Information Report***

Request Date: 09-17-10
Requestor Name: Roya Compani
Standard: ASTM-05

Search Type: LINEAR
13.24 mile(s)
Job Number: BR RTP-A
Filtered Report

Target Site: SEGMENT A
MOJAVE CA 93501

Demographics

Sites: 1	Non-Geocoded: 1	Population: NA
Radon: NA		

Site Location

	<u>Degrees (Decimal)</u>	<u>Degrees (Min/Sec)</u>		<u>UTMs</u>
Longitude:	-118.126202	-118:7:34	Easting:	397431.591
Latitude:	35.162843	35:9:46	Northing:	3891484.501
Elevation:	N/A		Zone:	11

Comment

Comment:

Additional Requests/Services

Adjacent ZIP Codes: 1 Mile(s)

Services:

ZIP Code	City Name	ST	Dist/Dir	Sel
93518	CALIENTE	CA	0.99 NW	Y
93519	CANTIL	CA	0.00 --	Y

	Requested?	Date
Fire Insurance Maps	No	
Aerial Photographs	No	
Historical Topos	No	
City Directories	No	
Title Search/Env Liens	No	
Municipal Reports	No	
Online Topos	No	

Environmental FirstSearch Search Summary Report

Target Site: SEGMENT A
MOJAVE CA 93501

FirstSearch Summary

Database	Sel	Updated	Radius	Site	1/8	1/4	1/2	1/2>	ZIP	TOTALS
NPL	Y	08-01-10	1.00	0	0	0	0	0	0	0
NPL Delisted	Y	08-02-10	0.50	0	0	0	0	-	0	0
CERCLIS	Y	07-02-10	0.50	0	0	0	0	-	0	0
NFRAP	Y	07-02-10	0.50	0	0	0	0	-	0	0
RCRA COR ACT	Y	07-14-10	1.00	0	0	0	0	0	0	0
RCRA TSD	Y	07-14-10	0.50	0	0	0	0	-	0	0
RCRA GEN	Y	07-14-10	0.25	0	0	0	-	-	0	0
RCRA NLR	Y	07-14-10	0.12	0	0	-	-	-	0	0
Federal Brownfield	Y	07-06-10	0.25	0	0	0	-	-	0	0
ERNS	Y	07-23-10	0.12	0	0	-	-	-	0	0
Tribal Lands	Y	12-01-05	1.00	0	0	0	0	0	1	1
State/Tribal Sites	Y	08-04-10	1.00	0	0	0	0	0	0	0
State Spills 90	Y	06-22-10	0.12	0	0	-	-	-	0	0
State/Tribal SWL	Y	06-21-10	0.50	0	0	0	0	-	0	0
State/Tribal LUST	Y	06-22-10	0.50	0	0	0	0	-	0	0
State/Tribal UST/AST	Y	03-10-10	0.25	0	0	0	-	-	0	0
State/Tribal EC	Y	NA	0.25	0	0	0	-	-	0	0
State/Tribal IC	Y	08-04-10	0.25	0	0	0	-	-	0	0
State/Tribal VCP	Y	08-04-10	0.50	0	0	0	0	-	0	0
State/Tribal Brownfields	Y	NA	0.50	0	0	0	0	-	0	0
State Permits	Y	06-22-10	0.12	0	0	-	-	-	0	0
State Other	Y	08-04-10	0.25	0	0	0	-	-	0	0
Federal IC/EC	Y	08-26-10	0.50	0	0	0	0	-	0	0
HW Manifest	Y	08-02-10	0.12	0	0	-	-	-	0	0
- TOTALS -				0	0	0	0	0	1	1

Notice of Disclaimer

Due to the limitations, constraints, inaccuracies and incompleteness of government information and computer mapping data currently available to TRACK Info Services, certain conventions have been utilized in preparing the locations of all federal, state and local agency sites residing in TRACK Info Services's databases. All EPA NPL and state landfill sites are depicted by a rectangle approximating their location and size. The boundaries of the rectangles represent the eastern and western most longitudes; the northern and southern most latitudes. As such, the mapped areas may exceed the actual areas and do not represent the actual boundaries of these properties. All other sites are depicted by a point representing their approximate address location and make no attempt to represent the actual areas of the associated property. Actual boundaries and locations of individual properties can be found in the files residing at the agency responsible for such information.

Waiver of Liability

Although TRACK Info Services uses its best efforts to research the actual location of each site, TRACK Info Services does not and can not warrant the accuracy of these sites with regard to exact location and size. All authorized users of TRACK Info Services's services proceeding are signifying an understanding of TRACK Info Services's searching and mapping conventions, and agree to waive any and all liability claims associated with search and map results showing incomplete and or inaccurate site locations.



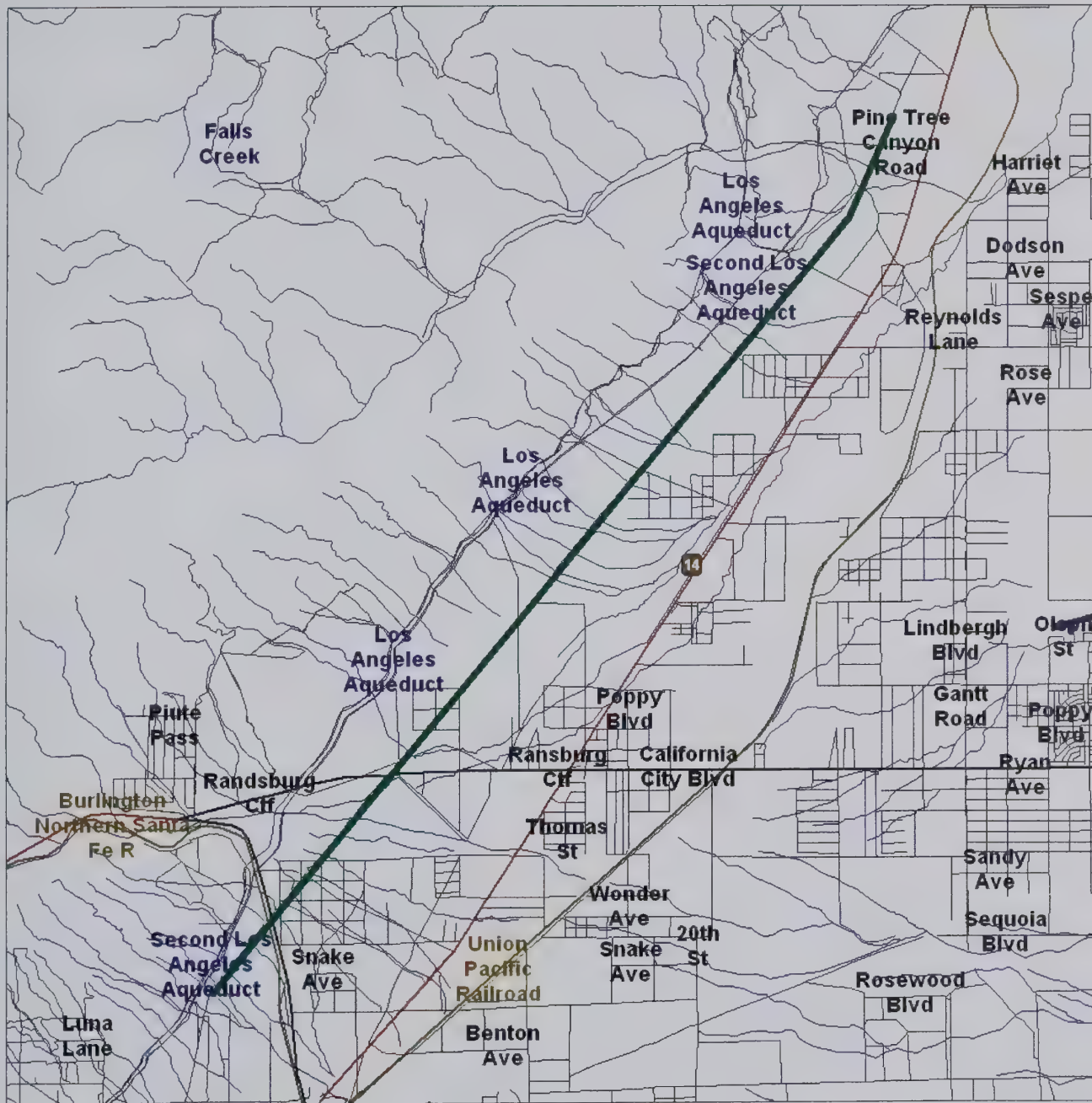
Environmental FirstSearch

Map Width: 2.000 Mile(s)

Single Map:



SEGMENT A , MOJAVE CA 93501



Source: U.S. Census TIGER Files

Linear Search Line
Identified Site, Multiple Sites, Receptor
NPL, DELNPL, Brownfield, Solid Waste Landfill (SWL), Hazardous Waste
Triballand.....
Railroads



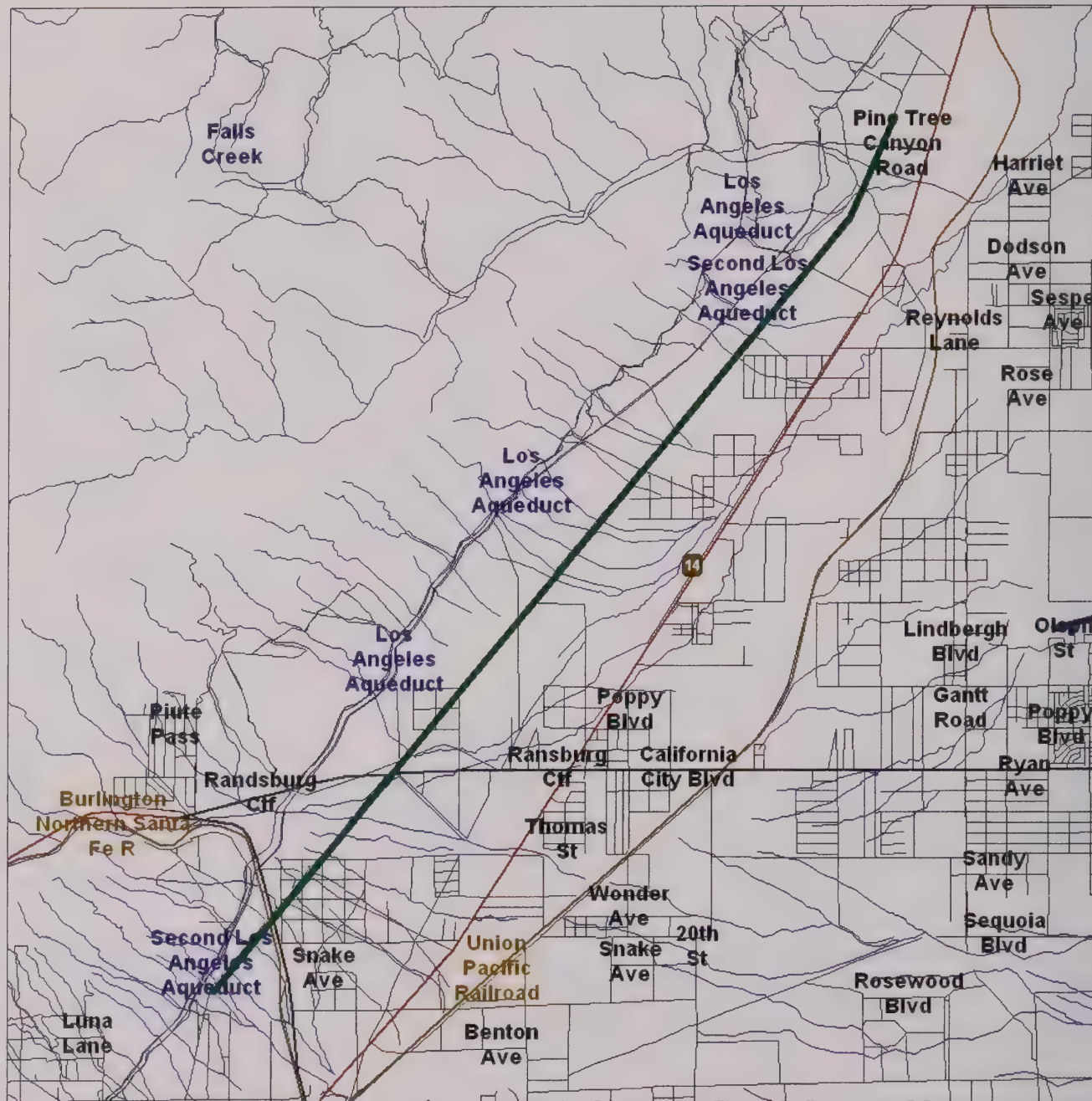


Environmental FirstSearch

Map Width: 2.000 Mile(s)
ASTM-05: NPL, RCRACOR, STATE



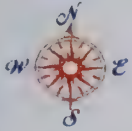
SEGMENT A , MOJAVE CA 93501



Source: U.S. Census TIGER Files

Linear Search Line
Identified Site, Multiple Sites, Receptor
NPL, DELNPL, Brownfield, Solid Waste Landfill (SWL), Hazardous Waste
Triballand
Railroads





Environmental FirstSearch

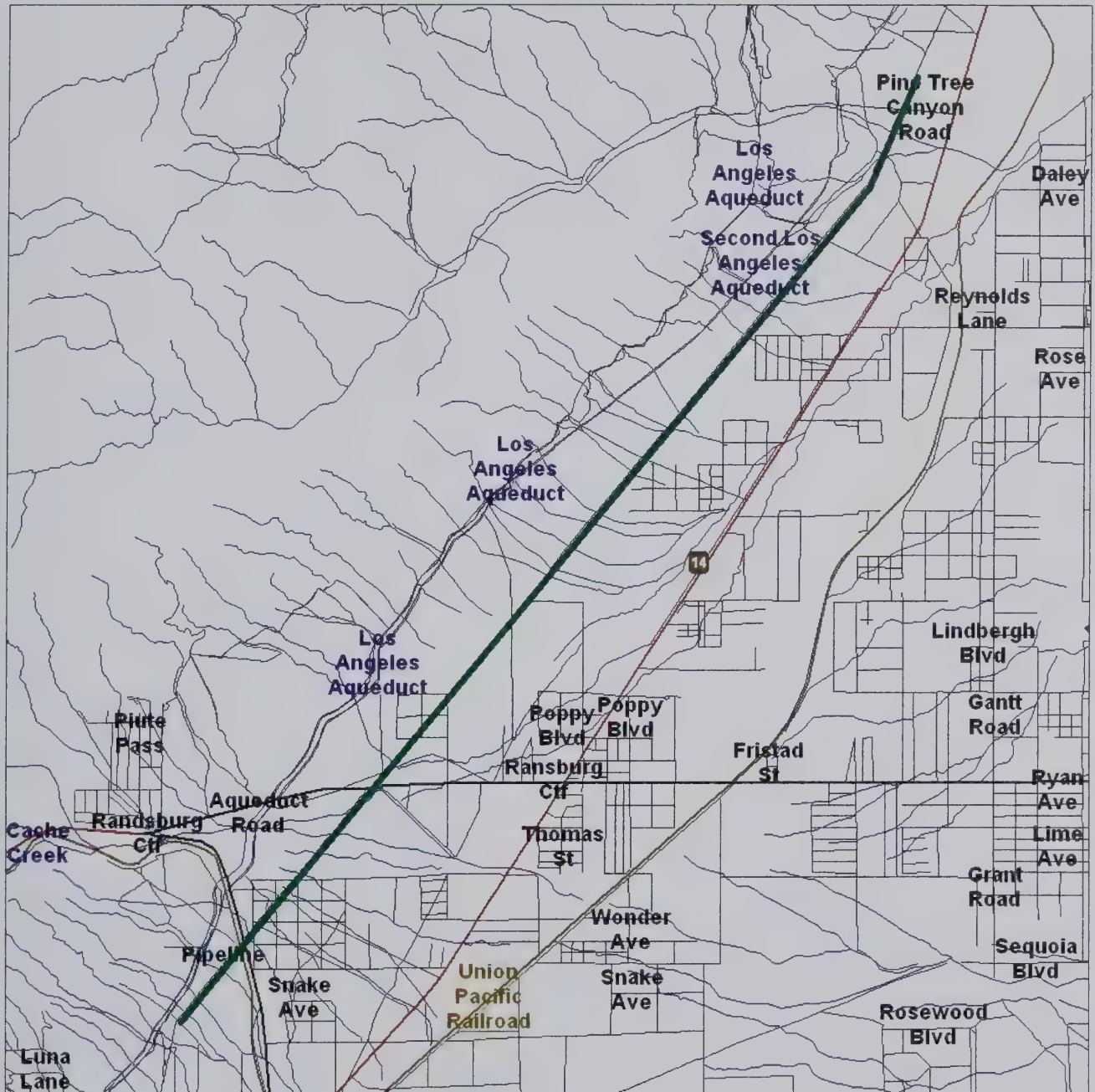
Map Width: 1.000 Mile(s)

ASTM-05: Multiple Databases

Environmental
FIRSTSEARCH



SEGMENT A , MOJAVE CA 93501



Source: U.S. Census TIGER Files

Linear Search Line
Identified Site, Multiple Sites, Receptor
NPL, DELNPL, Brownfield, Solid Waste Landfill (SWL), Hazardous Waste
Triballand.....
Railroads



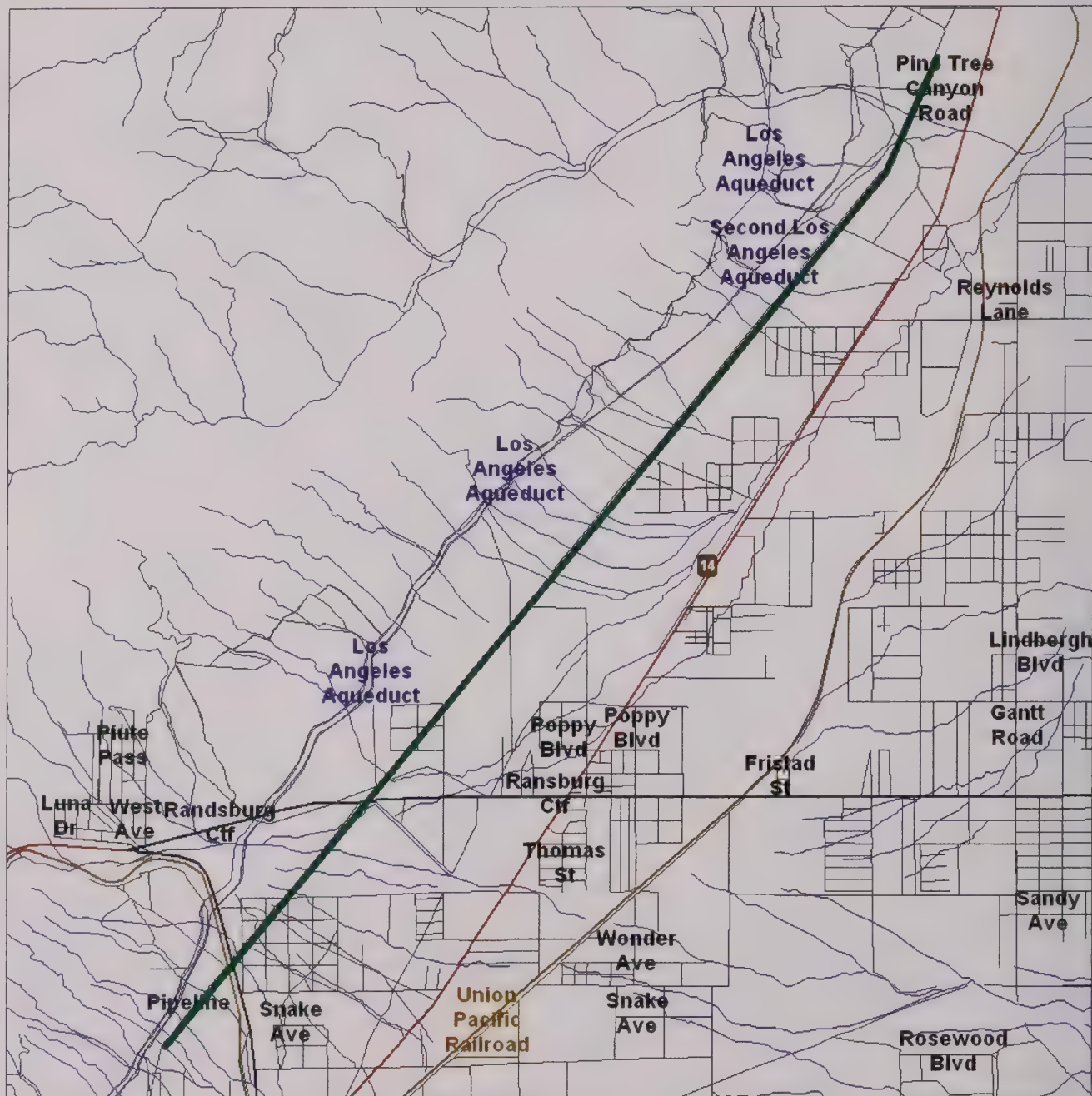


Environmental FirstSearch

Map Width: 0.500 Mile(s)
ASTM-05: RCRA GEN, UST, OTHER



SEGMENT A , MOJAVE CA 93501



Source: U.S. Census TIGER Files

Linear Search Line
Identified Site, Multiple Sites, Receptor
NPL, DELNPL, Brownfield, Solid Waste Landfill (SWL), Hazardous Waste
Triballand.....
Railroads





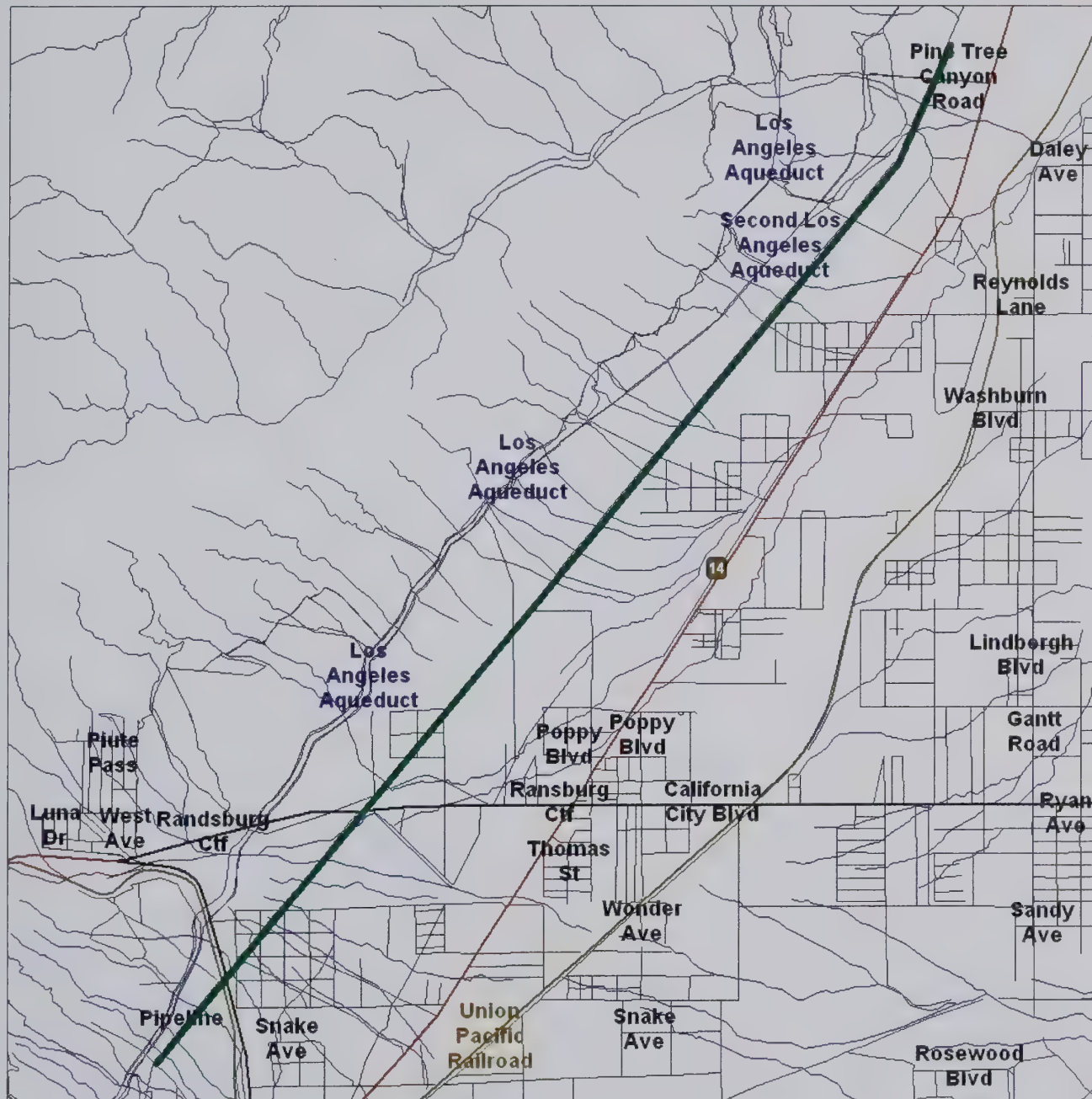
Environmental FirstSearch

Map Width: 0.240 Mile(s)

ASTM-05: Multiple Databases



SEGMENT A , MOJAVE CA 93501



Source: U.S. Census TIGER Files

Linear Search Line
Identified Site, Multiple Sites, Receptor
NPL, DELNPL, Brownfield, Solid Waste Landfill (SWL), Hazardous Waste
Triballand.....
Railroads



***Environmental FirstSearch
Sites Summary Report***

Target Property: SEGMENT A
 MOJAVE CA 93501

JOB: BR RTP-A

TOTAL: 1 **GEOCODED:** 0 **NON GEOCODED:** 1 **SELECTED:** 1

DB Type	Site Name/ID/Status	Address	Dist/Dir	ElevDiff	Map ID	Page No.
<i>TRIBALLAND</i>	<i>BUREAU OF INDIAN AFFAIRS CONTA BIA-93501</i>	<i>UNKNOWN CA 93501</i>	<i>NON GC</i>	<i>N/A</i>		<i>1</i>

**Environmental FirstSearch
Site Detail Report**

Target Property: SEGMENT A
 MOJAVE CA 93501

JOB: BR RTP-A

TRIBALLAND

SEARCH ID: 1	DIST/DIR: NON GC	ELEVATION:	MAP ID:
---------------------	-------------------------	-------------------	----------------

NAME: BUREAU OF INDIAN AFFAIRS CONTACT INFORMATION	REV: 01/15/08
ADDRESS: UNKNOWN	ID1: BIA-93501
CA 93501	ID2:
KERN	STATUS:
CONTACT:	PHONE:
SOURCE: BIA	

BUREAU OF INDIAN AFFAIRS CONTACT INFORMATION

OFFICE:	Pacific Regional Office
CONTACT:	CLAY GREGORY, REGIONAL DIRECTOR
ADDRESS:	2800 Cottage Way
	Sacramento CA 95825
PHONE:	Phone: 916-978-6000
FAX:	Fax: 916-978-6099

The Native American Consultation Database (NACD) is a tool for identifying consultation contacts for Indian tribes, Alaska Native villages and corporations, and Native Hawaiian organizations. The database is not a comprehensive source of information, but it does provide a starting point for the consultation process by identifying tribal leaders and NAGPRA contacts. This database can be accessed online at the following web address
<http://home.nps.gov/nacd/>

Environmental FirstSearch Descriptions

NPL: EPA NATIONAL PRIORITY LIST - The National Priorities List is a list of the worst hazardous waste sites that have been identified by Superfund. Sites are only put on the list after they have been scored using the Hazard Ranking System (HRS), and have been subjected to public comment. Any site on the NPL is eligible for cleanup using Superfund Trust money.

A Superfund site is any land in the United States that has been contaminated by hazardous waste and identified by the Environmental Protection Agency (EPA) as a candidate for cleanup because it poses a risk to human health and/or the environment.

FINAL - Currently on the Final NPL

PROPOSED - Proposed for NPL

NPL DELISTED: EPA NATIONAL PRIORITY LIST Subset - Database of delisted NPL sites. The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

DELISTED - Deleted from the Final NPL

CERCLIS: EPA COMPREHENSIVE ENVIRONMENTAL RESPONSE COMPENSATION AND LIABILITY INFORMATION SYSTEM (CERCLIS)- CERCLIS is a database of potential and confirmed hazardous waste sites at which the EPA Superfund program has some involvement. It contains sites that are either proposed to be or are on the National Priorities List (NPL) as well as sites that are in the screening and assessment phase for possible inclusion on the NPL.

PART OF NPL- Site is part of NPL site

DELETED - Deleted from the Final NPL

FINAL - Currently on the Final NPL

NOT PROPOSED - Not on the NPL

NOT VALID - Not Valid Site or Incident

PROPOSED - Proposed for NPL

REMOVED - Removed from Proposed NPL

SCAN PLAN - Pre-proposal Site

WITHDRAWN - Withdrawn

NFRAP: EPA COMPREHENSIVE ENVIRONMENTAL RESPONSE COMPENSATION AND LIABILITY INFORMATION SYSTEM ARCHIVED SITES - database of Archive designated CERCLA sites that, to the best of EPA's knowledge, assessment has been completed and has determined no further steps will be taken to list this site on the National Priorities List (NPL). This decision does not necessarily mean that there is no hazard associated with a given site; it only means that, based upon available information, the location is not judged to be a potential NPL site.

NFRAP - No Further Remedial Action Plan

P - Site is part of NPL site

D - Deleted from the Final NPL

F - Currently on the Final NPL

N - Not on the NPL

O - Not Valid Site or Incident

P - Proposed for NPL

R - Removed from Proposed NPL

S - Pre-proposal Site

W - Withdrawn

RCRA COR ACT: EPA RESOURCE CONSERVATION AND RECOVERY INFORMATION SYSTEM SITES - Database of hazardous waste information contained in the Resource Conservation and Recovery Act Information (RCRAInfo), a national program management and inventory system about hazardous waste handlers. In general, all generators, transporters, treaters, storers, and disposers of hazardous waste are required to provide information about their activities to state environmental agencies. These agencies, in turn pass on the information to regional and national EPA offices. This regulation is governed by the Resource Conservation and Recovery Act (RCRA), as amended by the Hazardous and Solid Waste Amendments of 1984. RCRAInfo facilities that have reported violations and subject to corrective actions.

RCRA TSD: *EPA* RESOURCE CONSERVATION AND RECOVERY INFORMATION SYSTEM TREATMENT, STORAGE, and DISPOSAL FACILITIES. - Database of hazardous waste information contained in the Resource Conservation and Recovery Act Information (RCRAInfo), a national program management and inventory system about hazardous waste handlers. In general, all generators, transporters, treaters, storers, and disposers of hazardous waste are required to provide information about their activities to state environmental agencies. These agencies, in turn pass on the information to regional and national EPA offices. This regulation is governed by the Resource Conservation and Recovery Act (RCRA), as amended by the Hazardous and Solid Waste Amendments of 1984.

Facilities that treat, store, dispose, or incinerate hazardous waste.

RCRA GEN: *EPA/MA DEP/CT DEP* RESOURCE CONSERVATION AND RECOVERY INFORMATION SYSTEM GENERATORS - Database of hazardous waste information contained in the Resource Conservation and Recovery Act Information (RCRAInfo), a national program management and inventory system about hazardous waste handlers. In general, all generators, transporters, treaters, storers, and disposers of hazardous waste are required to provide information about their activities to state environmental agencies. These agencies, in turn pass on the information to regional and national EPA offices. This regulation is governed by the Resource Conservation and Recovery Act (RCRA), as amended by the Hazardous and Solid Waste Amendments of 1984.

Facilities that generate or transport hazardous waste or meet other RCRA requirements.

LGN - Large Quantity Generators

SGN - Small Quantity Generators

VGN - Conditionally Exempt Generator.

Included are RAATS (RCRA Administrative Action Tracking System) and CMEL (Compliance Monitoring & Enforcement List) facilities.

CONNECTICUT HAZARDOUS WASTE MANIFEST - Database of all shipments of hazardous waste within, into or from Connecticut. The data includes date of shipment, transporter and TSD info, and material shipped and quantity. This data is appended to the details of existing generator records.

MASSACHUSETTES HAZARDOUS WASTE GENERATOR - database of generators that are regulated under the MA DEP.

VQN-MA = generates less than 220 pounds or 27 gallons per month of hazardous waste or waste oil.

SQN-MA = generates 220 to 2,200 pounds or 27 to 270 gallons per month of waste oil.

LQG-MA = generates greater than 2,200 lbs of hazardous waste or waste oil per month.

RCRA NLR: *EPA* RESOURCE CONSERVATION AND RECOVERY INFORMATION SYSTEM SITES - Database of hazardous waste information contained in the Resource Conservation and Recovery Act Information (RCRAInfo), a national program management and inventory system about hazardous waste handlers. In general, all generators, transporters, treaters, storers, and disposers of hazardous waste are required to provide information about their activities to state environmental agencies. These agencies, in turn pass on the information to regional and national EPA offices. This regulation is governed by the Resource Conservation and Recovery Act (RCRA), as amended by the Hazardous and Solid Waste Amendments of 1984.

Facilities not currently classified by the EPA but are still included in the RCRAInfo database. Reasons for non classification:

Failure to report in a timely matter.

No longer in business.

No longer in business at the listed address.

No longer generating hazardous waste materials in quantities which require reporting.

ERNS: *EPA/NRC* EMERGENCY RESPONSE NOTIFICATION SYSTEM (ERNS) - Database of incidents reported to the National Response Center. These incidents include chemical spills, accidents involving chemicals (such as fires or explosions), oil spills, transportation accidents that involve oil or chemicals, releases of radioactive materials, sightings of oil sheens on bodies of water, terrorist incidents involving chemicals, incidents where illegally dumped chemicals have been found, and drills intended to prepare responders to handle these kinds of incidents. Data since January 2001 has been received from the National Response System database as the EPA no longer maintains this data.

Tribal Lands: *DOI/BIA* INDIAN LANDS OF THE UNITED STATES - Database of areas with boundaries established by treaty, statute, and (or) executive or court order, recognized by the Federal Government as territory in which American Indian tribes have primary governmental authority. The Indian Lands of the United States map layer shows areas of 640 acres or more, administered by the Bureau of Indian Affairs. Included are

Federally-administered lands within a reservation which may or may not be considered part of the reservation.
BUREAU OF INDIAN AFFAIRS CONTACT - Regional contact information for the Bureau of Indian Affairs offices.

State/Tribal Sites: CA EPA SMBRPD / CAL SITES- The California Department of Toxic Substances Control (DTSC) has developed an electronic database system called Envirostor with information about sites that are known to be contaminated with hazardous substances as well as information on uncharacterized properties where further studies may reveal problems. The Site Mitigation and Brownfields Reuse Program Database (SMBRPD), formerly known as CalSites, is used primarily by DTSC's staff as an informational tool to evaluate and track activities at properties that may have been affected by the release of hazardous substances. The SMBRPD displays information in six categories, two of which are found in ST. The categories listed under ST are:

1. State Response Sites.
2. School Property Evaluation Program Properties (SCH)

Please Note: Our reports list the above sites as DB Type (STATE). Other categories found in the SMBRPD are listed in our reports in the DB Types OT and VC.

Each Category contains information on properties based upon the type of work taking place at the site. State Response Sites contains only known and potential hazardous substance release sites considered as posing the greatest threat to the public. School sites included in ST will be found within the SMBRPD's School Property Evaluation Program.

CORTESE LIST-Pursuant to Government Code Section 65962.5, the Hazardous Waste and Substances Sites List has been compiled by Cal/EPA, Hazardous Materials Data Management Program to provide information about the location of hazardous materials release sites. Cortese List sites that fall under DTSC's guidelines for State Response sites are included in our reports in the ST category as are qualifying sites from the Annual Work Plan (formerly Bond Expenditure Plan) and the historic ASPIS databases.

State Spills 90: CA EPA SLIC REGIONS 1 - 9- The California Regional Water Quality Control Boards maintain report of sites that have records of spills, leaks, investigation, and cleanups.

State/Tribal SWL: CA IWMB/SWRCB/COUNTY SWIS SOLID WASTE INFORMATION SYSTEM-The California Integrated Waste Management Board maintains a database on solid waste facilities, operations, and disposal sites throughout the state of California. The types of facilities found in this database include landfills, transfer stations, material recovery facilities, composting sites, transformation facilities, waste tire sites, and closed disposal sites. For more information on individual sites call the number listed in the source field..

Please Note: This database contains poor site location information for many sites in our reports; therefore, it may not be possible to locate or plot some sites in our reports.

WMUDS-The State Water Resources Control Board maintained the Waste Management Unit Database System (WMUDS). It is no longer updated. It tracked management units for several regulatory programs related to waste management and its potential impact on groundwater. Two of these programs (SWAT & TPCA) are no longer on-going regulatory programs as described below. Chapter 15 (SC15) is still an on-going regulatory program and information is updated periodically but not to the WMUDS database. The WMUDS System contains information from the following agency databases: Facility, Waste Management Unit (WMU), Waste Discharger System (WDS), SWAT, Chapter 15, TPCA, RCRA, Inspections, Violations, and Enforcement's.

Note: This database contains poor site location information for many sites in our reports; therefore, it may not be possible to locate or plot some sites in reports.

ORANGE COUNTY LANDFILLS LIST- A list maintained by the Orange County Health Department.

State/Tribal LUST: CA SWRCB/COUNTY LUSTIS- The State Water Resources Control Board maintains a database of sites with confirmed or unconfirmed leaking underground storage tanks. Information for this database is collected from the states regional boards quarterly and integrated with this database.

SAN DIEGO COUNTY LEAKING TANKS- The San Diego County Department of Environmental Health maintains a database of sites with confirmed or unconfirmed leaking underground storage tanks within its HE17/58 database. For more information on a specific file call the HazMat Duty Specialist at phone number listed in the source information field.

State/Tribal UST/AST: CA EPA/COUNTY/CITY ABOVEGROUND STORAGE TANKS LISTING-The Above Ground Petroleum Storage Act became State Law effective January 1, 1990. In general, the law requires owners or operators of AST's with petroleum products to file a storage statement and pay a fee by July 1, 1990 and every two years thereafter, take specific action to prevent spills, and in certain instances implement a groundwater monitoring program. This law does not apply to that portion of a tank facility associated with the

production oil and regulated by the State Division of Oil and Gas of the Dept. of Conservation.

SWEEPS / FIDS STATE REGISTERED UNDERGROUND STORAGE TANKS- Until 1994 the State Water Resources Control Board maintained a database of registered underground storage tanks statewide referred to as the SWEEPS System. The SWEEPS UST information was integrated with the CAL EPA's Facility Index System database (FIDS) which is a master index of information from numerous California agency environmental databases. That was last updated in 1994. We have included the UST information from the FIDS database in our reports for historical purposes to help our clients identify where tanks may possibly have existed. For more information on specific sites from individual paper files archived at the State Water Resources Control Board call the number listed with the source information.

INDIAN LANDS UNDERGROUND STORAGE TANKS LIST- A listing of underground storage tanks currently on Indian Lands under federal jurisdiction. California Indian Land USTs are administered by US EPA Region 9.

CUPA DATABASES & SOURCES- Definition of a CUPA: A Certified Unified Program Agency (CUPA) is a local agency that has been certified by the CAL EPA to implement six state environmental programs within the local agency's jurisdiction. These can be a county, city, or JPA (Joint Powers Authority). This program was established under the amendments to the California Health and Safety Code made by SB 1082 in 1994.

A Participating Agency (PA) is a local agency that has been designated by the local CUPA to administer one or more Unified Programs within their jurisdiction on behalf of the CUPA. A Designated Agency (DA) is an agency that has not been certified by the CUPA but is the responsible local agency that would implement the six unified programs until they are certified.

Please Note: We collect and maintain information regarding Underground Storage Tanks from the majority of the CUPAs and Participating Agencies in the State of California. These agencies typically do not maintain nor release such information on a uniform or consistent schedule; therefore, currency of the data may vary. Please look at the details on a specific site with a UST record in the First Search Report to determine the actual currency date of the record as provided by the relevant agency. Numerous efforts are made on a regular basis to obtain updated records.

State/Tribal IC: CA EPA DEED-RESTRICTED SITES LISTING- The California EPA's Department of Toxic Substances Control Board maintains a list of deed-restricted sites, properties where the DTSC has placed limits or requirements on the future use of the property due to varying levels of cleanup possible, practical or necessary at the site.

State/Tribal VCP: CA EPA SMBRPD / CAL SITES- The California Department of Toxic Substances Control (DTSC) has developed an electronic database system called Envirostor with information about sites that are known to be contaminated with hazardous substances as well as information on uncharacterized properties where further studies may reveal problems. The Site Mitigation and Brownfields Reuse Program Database (SMBRPD), formerly known as CalSites, is used primarily by DTSC's staff as an informational tool to evaluate and track activities at properties that may have been affected by the release of hazardous substances. The Voluntary Cleanup Program (VCP) category contains only those properties undergoing voluntary investigation and/or cleanup and which are listed in the Voluntary Cleanup Program.

Please Note: Our reports list the above sites as DB Type VC.

RADON: NTIS NATIONAL RADON DATABASE - EPA radon data from 1990-1991 national radon project collected for a variety of zip codes across the United States.

State Permits: CA EPA/COUNTY SAN DIEGO COUNTY HE17 PERMITS- The HE17/58 database tracks establishments issued permits and the status of their permits in relation to compliance with federal, state, and local regulations that the County oversees. It tracks if a site is a hazardous waste generator, TSD, gas station, has underground tanks, violations, or unauthorized releases. For more information on a specific file call the HazMat Duty Specialist at the phone number listed in the source information field.

SAN BERNARDINO COUNTY HAZARDOUS MATERIALS PERMITS- Handlers and Generators Permit Information Maintained by the Hazardous Materials Division.

State Other: CA EPA/COUNTY SMBRPD / CAL SITES- The California Department of Toxic Substances Control (DTSC) has developed an electronic database system called Envirostor with information about sites that are known to be contaminated with hazardous substances as well as information on uncharacterized properties where further studies may reveal problems. The Site Mitigation and Brownfields Reuse Program Database (SMBRPD), formerly known as CalSites, is used primarily by DTSC's staff as an informational tool to evaluate and track activities at properties that may have been affected by the release of hazardous substances.

The SMBRPD displays information in six categories, two of which are found in ST. The categories listed under

OT are:

1. Unconfirmed Properties Referred to Another Local or State Agency (REF)

2. Properties where a No Further Action Determination has been made (NFA)

Please Note: Our reports list the above sites as DB Type (OTHER). Other categories found in the SMBRPD are listed in our reports in the DB Types ST and VC.

LA COUNTY SITE MITIGATION COMPLAINT CONTROL LOG- The County of Los Angeles Public Health Investigation Compliant Control Log.

ORANGE COUNTY INDUSTRIAL SITE CLEANUPS- List maintained by the Orange County Environmental Health Agency.

RIVERSIDE COUNTY WASTE GENERATORS-A list of facilities in Riverside County which generate hazardous waste.

SACRAMENTO COUNTY MASTER HAZMAT LIST-Master list of facilities within Sacramento County with potentially hazardous materials.

SACRAMENTO COUNTY TOXIC SITE CLEANUPS-A list of sites where unauthorized releases of potentially hazardous materials have occurred.

HW Manifest: *CA EPA* DEPARTMENT OF TOXIC SUBSTANCES CONTROL HAZARDOUS WASTE MANIFEST INVENTORY-Records maintained by the CA DTSC of Hazardous Waste Manifests used to track and document the transport of hazardous waste from a generator's site to the site of its final disposition.

Environmental FirstSearch Database Sources

NPL: EPA Environmental Protection Agency

Updated quarterly

NPL DELISTED: EPA Environmental Protection Agency

Updated quarterly

CERCLIS: EPA Environmental Protection Agency

Updated quarterly

NFRAP: EPA Environmental Protection Agency.

Updated quarterly

RCRA COR ACT: EPA Environmental Protection Agency.

Updated quarterly

RCRA TSD: EPA Environmental Protection Agency.

Updated quarterly

RCRA GEN: EPAMA DEP/CT DEP Environmental Protection Agency, Massachusetts Department of Environmental Protection, Connecticut Department of Environmental Protection

Updated quarterly

RCRA NLR: EPA Environmental Protection Agency

Updated quarterly

ERNS: EPA/NRC Environmental Protection Agency

Updated annually

Tribal Lands: DOI/BIA United States Department of the Interior

Updated annually

State/Tribal Sites: CA EPA The CAL EPA, Depart. Of Toxic Substances Control
Phone: (916) 323-3400

Updated quarterly/when available

State Spills 90: CA EPA The California State Water Resources Control Board

Updated when available

State/Tribal SWL: CA IWMB/SWRCB/COUNTY The California Integrated Waste Management Board

Phone:(916) 255-2331

The State Water Resources Control Board

Phone:(916) 227-4365

Orange County Health Department

Updated quarterly/when available

State/Tribal LUST: CA SWRCB/COUNTY The California State Water Resources Control Board

Phone:(916) 227-4416

San Diego County Department of Environmental Health

Updated quarterly/when available

State/Tribal UST/AST: CA EPA/COUNTY/CITY The State Water Resources Control Board

Phone:(916) 227-4364

CAL EPA Department of Toxic Substances Control

Phone:(916)227-4404

US EPA Region 9 Underground Storage Tank Program

Phone: (415) 972-3372

ALAMEDA COUNTY CUPAS:

- * County of Alameda Department of Environmental Health

- * Cities of Berkeley, Fremont, Hayward, Livermore / Pleasanton, Newark, Oakland, San Leandro, Union

ALPINE COUNTY CUPA:

- * Health Department (Only updated by agency sporadically)

AMADOR COUNTY CUPA:

- * County of Amador Environmental Health Department

BUTTE COUNTY CUPA

- * County of Butte Environmental Health Division (Only updated by agency biannually)

CALAVERAS COUNTY CUPA:

- * County of Calaveras Environmental Health Department

COLUSA COUNTY CUPA:

- * Environmental Health Dept.

CONTRA COSTA COUNTY CUPA:

- * Hazardous Materials Program

DEL NORTE COUNTY CUPA:

- * Department of Health and Social Services

EL DORADO COUNTY CUPAS:

- * County of El Dorado Environmental Health - Solid Waste Div (Only updated by agency annually)

- * County of El Dorado EMD Tahoe Division (Only updated by agency annually)

FRESNO COUNTY CUPA:

- * Haz. Mat and Solid Waste Programs

GLENN COUNTY CUPA:

- * Air Pollution Control District

HUMBOLDT COUNTY CUPA:

- * Environmental Health Division

IMPERIAL COUNTY CUPA:

- * Department of Planning and Building

INYO COUNTY CUPA:

- * Environmental Health Department

KERN COUNTY CUPA:

- * County of Kern Environmental Health Department
- * City of Bakersfield Fire Department

KINGS COUNTY CUPA:

- * Environmental Health Services

LAKE COUNTY CUPA:

- * Division of Environmental Health

LASSEN COUNTY CUPA:

- * Department of Agriculture

LOS ANGELES COUNTY CUPAS:

- * County of Los Angeles Fire Department CUPA Data as maintained by the Los Angeles County Department of Public Works

- * County of Los Angeles Environmental Programs Division

- * Cities of Burbank, El Segundo, Glendale, Long Beach/Signal Hill, Los Angeles, Pasadena, Santa Fe Springs, Santa Monica, Torrance, Vernon

MADERA COUNTY CUPA:

- * Environmental Health Department

MARIN COUNTY CUPA:

- * County of Marin Office of Waste Management

- * City of San Rafael Fire Department

MARIPOSA COUNTY CUPA:

- * Health Department

MENDOCINO COUNTY CUPA:

- * Environmental Health Department

MERCED COUNTY CUPA:

- * Division of Environmental Health

MODOC COUNTY CUPA:

- * Department of Agriculture

MONO COUNTY CUPA:

- * Health Department

MONTEREY COUNTY CUPA:

- * Environmental Health Division

NAPA COUNTY CUPA:

- * Hazardous Materials Section

NEVADA COUNTY CUPA:

- * Environmental Health Department

ORANGE COUNTY CUPAS:

- * County of Orange Environmental Health Department

- * Cities of Anaheim, Fullerton, Orange, Santa Ana

- * County of Orange Environmental Health Department

PLACER COUNTY CUPAS:

- * County of Placer Division of Environmental Health Field Office

- * Tahoe City

- * City of Roseville Roseville Fire Department

PLUMAS COUNTY CUPA:

- * Environmental Health Department

RIVERSIDE COUNTY CUPA:

- * Environmental Health Department

SACRAMENTO COUNTY CUPA:

- * County Environmental Mgmt Dept, Haz. Mat. Div.

SAN BENITO COUNTY CUPA:

- * City of Hollister Environmental Service Department

SAN BERNARDINO COUNTY CUPAS:

- * County of San Bernardino Fire Department, Haz. Mat. Div.

- * City of Hesperia Hesperia Fire Prevention Department

- * City of Victorville Victorville Fire Department

SAN DIEGO COUNTY CUPA:

- * The San Diego County Dept. of Environmental Health HE 17/58

SAN FRANCISCO COUNTY CUPA:

- * Department of Public Health

SAN JOAQUIN COUNTY CUPA:
 * Environmental Health Division
 SAN LUIS OBISPO COUNTY CUPAS:
 * County of San Luis Obispo Environmental Health Division
 * City of San Luis Obispo City Fire Department
 SAN MATEO COUNTY CUPA:
 * Environmental Health Department
 SANTA BARBARA COUNTY CUPA:
 * County Fire Dept Protective Services Division
 SANTA CLARA COUNTY CUPAS:
 * County of Santa Clara Hazardous Materials Compliance Division
 * Santa Clara County Central Fire Protection District (Covers Campbell, Cupertino, Los Gatos, & Morgan Hill)
 * Cities of Gilroy, Milpitas, Mountain View, Palo Alto, San Jose Fire, Santa Clara, Sunnyvale
 SANTA CRUZ COUNTY CUPA:
 * Environmental Health Department
 SHASTA COUNTY CUPA:
 * Environmental Health Department
 SIERRA COUNTY CUPA:
 * Health Department
 SISKIYOU COUNTY CUPA:
 * Environmental Health Department
 SONOMA COUNTY CUPAS:
 * County of Sonoma Department Of Environmental Health
 * Cities of Healdsburg / Sebastopol, Petaluma, Santa Rosa
 STANISLAUS COUNTY CUPA:
 * Department of Environmental Resources Haz. Mat. Division
 SUTTER COUNTY CUPA:
 * Department of Agriculture
 TEHAMA COUNTY CUPA:
 * Department of Environmental Health
 TRINITY COUNTY CUPA:
 * Department of Health
 TULARE COUNTY CUPA:
 * Environmental Health Department
 TUOLUMNE COUNTY CUPA:
 * Environmental Health
 VENTURA COUNTY CUPAS:
 * County of Ventura Environmental Health Division
 * Cities of Oxnard, Ventura
 YOLO COUNTY CUPA:
 * Environmental Health Department
 YUBA COUNTY CUPA:

Updated quarterly/annually/when available

State/Tribal IC: CA EPA The California EPA Department of Toxic Substances Control.

Updated Updated quarterly/annually/when available

State/Tribal VCP: CA EPA The California EPA Department of Toxic Substances Control.

Updated Updated quarterly/annually/when available

RADON: NTIS Environmental Protection Agency, National Technical Information Services

Updated periodically

State Permits: CA EPA/COUNTY The San Diego County Depart. Of Environmental Health
Phone:(619) 338-2211
San Bernardino County Fire Department

Updated quarterly/when available

State Other: CA EPA/COUNTY The CAL EPA, Depart. Of Toxic Substances Control
Phone: (916) 323-3400
The Los Angeles County Hazardous Materials Division
Phone: (323) 890-7806
Orange County Environmental Health Agency
Phone: (714) 834-3536
Riverside County Department of Environmental Health, Hazardous Materials Management Division
Phone:(951) 358-5055
Sacramento County Environmental Management Department

Updated quarterly/when available

HW Manifest: CA EPA
CAL EPA, Department of Toxic Substances Control

Updated annually/when available

TRACK ► INFO SERVICES, LLC

Environmental FirstSearch™ Report

Target Property:

SEGMENT B

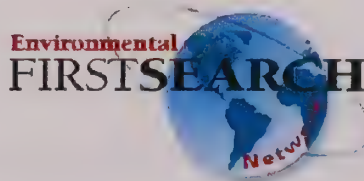
MOJAVE CA 93501

Job Number: BRRTP-B

PREPARED FOR:

Power Engineers, Inc.
731 E Ball Road Suite 100
Anaheim, CA 92805
(949) 280-7922

09-17-10



Tel: (866) 664-9981

Fax: (818) 249-4227

***Environmental FirstSearch
Site Information Report***

Request Date: 09-17-10
Requestor Name: Roya Compani
Standard: ASTM-05

Search Type: LINEAR
26.29 mile(s)
Job Number: BR RTP-B
Filtered Report

Target Site: SEGMENT B
MOJAVE CA 93501

Demographics

Sites: 3	Non-Geocoded: 2	Population: NA
Radon: NA		

Site Location

	<u>Degrees (Decimal)</u>	<u>Degrees (Min/Sec)</u>		<u>UTMs</u>
Longitude:	-118.271133	-118:16:16	Easting:	383872.971
Latitude:	34.909159	34:54:33	Northing:	3863509.188
Elevation:	N/A		Zone:	11

Comment

Comment:

Additional Requests/Services

Adjacent ZIP Codes: 1 Mile(s)

Services:

ZIP Code	City Name	ST	Dist/Dir	Sel
93536	LANCASTER	CA	0.00 --	Y
93560	ROSAMOND	CA	0.00 --	Y

	Requested?	Date
Fire Insurance Maps	No	
Aerial Photographs	No	
Historical Topos	No	
City Directories	No	
Title Search/Env Liens	No	
Municipal Reports	No	
Online Topos	No	

Environmental FirstSearch Search Summary Report

Target Site: SEGMENT B
MOJAVE CA 93501

FirstSearch Summary

Database	Sel	Updated	Radius	Site	1/8	1/4	1/2	1/2>	ZIP	TOTALS
NPL	Y	08-01-10	1.00	0	0	0	0	0	0	0
NPL Delisted	Y	08-02-10	0.50	0	0	0	0	-	0	0
CERCLIS	Y	07-02-10	0.50	0	0	0	0	-	0	0
NFRAP	Y	07-02-10	0.50	0	0	0	0	-	0	0
RCRA COR ACT	Y	07-14-10	1.00	0	0	0	0	0	0	0
RCRA TSD	Y	07-14-10	0.50	0	0	0	0	-	0	0
RCRA GEN	Y	07-14-10	0.25	0	0	0	-	-	0	0
RCRA NLR	Y	07-14-10	0.12	0	0	-	-	-	0	0
Federal Brownfield	Y	07-06-10	0.25	0	0	0	-	-	0	0
ERNS	Y	07-23-10	0.12	0	0	-	-	-	0	0
Tribal Lands	Y	12-01-05	1.00	0	0	0	0	0	2	2
State/Tribal Sites	Y	08-04-10	1.00	0	0	0	0	0	0	0
State Spills 90	Y	06-22-10	0.12	0	0	-	-	-	0	0
State/Tribal SWL	Y	06-21-10	0.50	0	0	1	0	-	0	1
State/Tribal LUST	Y	06-22-10	0.50	0	0	0	0	-	0	0
State/Tribal UST/AST	Y	03-10-10	0.25	0	0	0	-	-	0	0
State/Tribal EC	Y	NA	0.25	0	0	0	-	-	0	0
State/Tribal IC	Y	08-04-10	0.25	0	0	0	-	-	0	0
State/Tribal VCP	Y	08-04-10	0.50	0	0	0	0	-	0	0
State/Tribal Brownfields	Y	NA	0.50	0	0	0	0	-	0	0
State Permits	Y	06-22-10	0.12	0	0	-	-	-	0	0
State Other	Y	08-04-10	0.25	0	0	0	-	-	0	0
Federal IC/EC	Y	08-26-10	0.50	0	0	0	0	-	0	0
HW Manifest	Y	08-02-10	0.12	0	0	-	-	-	0	0
- TOTALS -				0	0	1	0	0	2	3

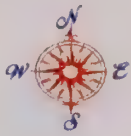
Notice of Disclaimer

Due to the limitations, constraints, inaccuracies and incompleteness of government information and computer mapping data currently available to TRACK Info Services, certain conventions have been utilized in preparing the locations of all federal, state and local agency sites residing in TRACK Info Services's databases. All EPA NPL and state landfill sites are depicted by a rectangle approximating their location and size. The boundaries of the rectangles represent the eastern and western most longitudes; the northern and southern most latitudes. As such, the mapped areas may exceed the actual areas and do not represent the actual boundaries of these properties. All other sites are depicted by a point representing their approximate address location and make no attempt to represent the actual areas of the associated property. Actual boundaries and locations of individual properties can be found in the files residing at the agency responsible for such information.

Waiver of Liability

Although TRACK Info Services uses its best efforts to research the actual location of each site, TRACK Info Services does not and can not warrant the accuracy of these sites with regard to exact location and size. All authorized users of TRACK Info Services's services proceeding are signifying an understanding of TRACK Info Services's searching and mapping conventions, and agree to waive any and all liability claims associated with search and map results showing incomplete and or inaccurate site locations.

Linear Search Line			
Identified Site, Multiple Sites, Receptor			
NPL, DELNPL, Brownfield, Solid Waste Landfill (SWL), Hazardous Waste			
Triballand.....			
Railroads			

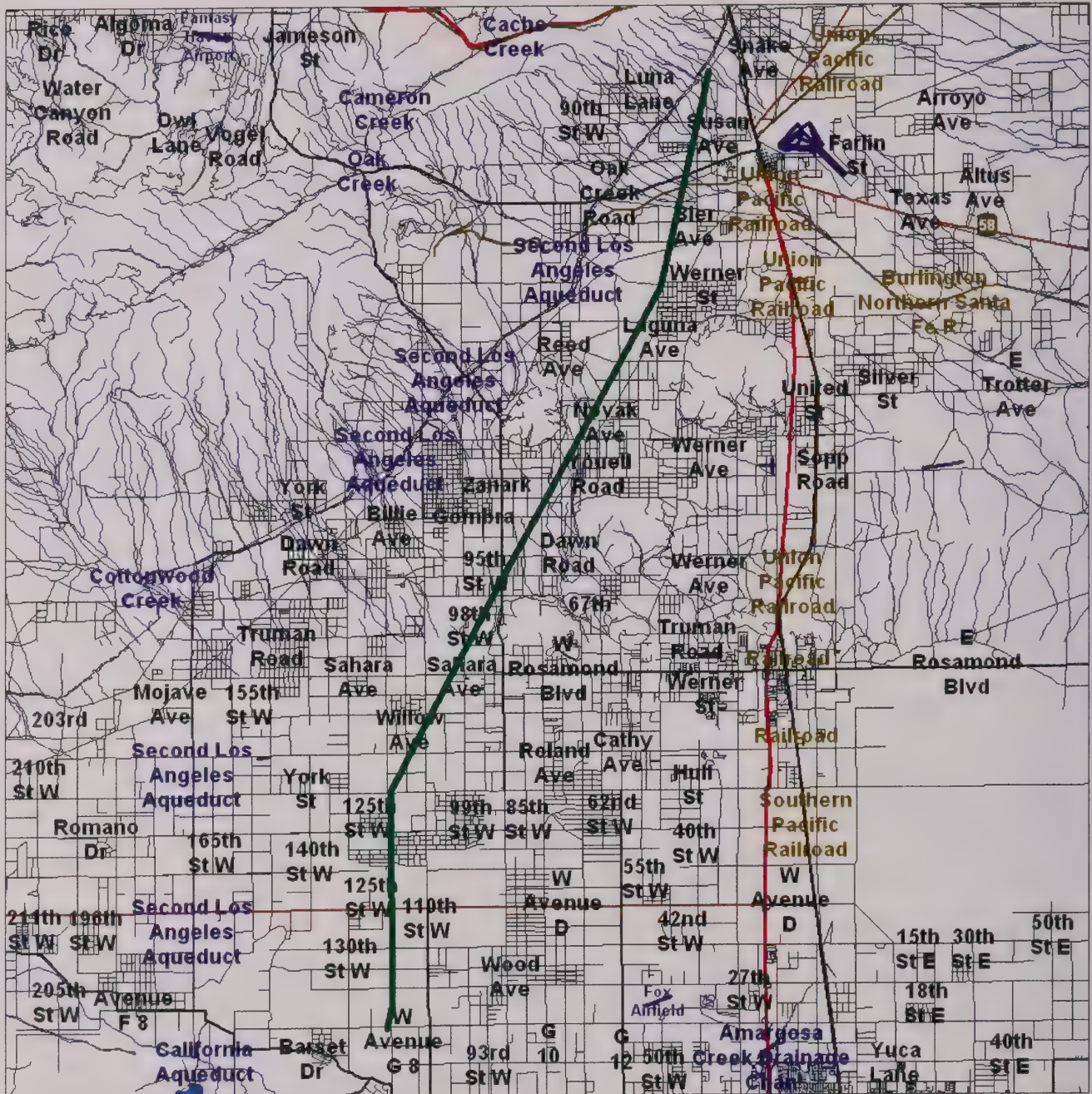


Environmental FirstSearch

1 Mile Radius from Line
ASTM-05: NPL, RCRACOR, STATE











SEGMENT B , MOJAVE CA 93501



Source: U.S. Census TIGER Files

Linear Search Line	
Identified Site, Multiple Sites, Receptor	
NPL, DELNPL, Brownfield, Solid Waste Landfill (SWL), Hazardous Waste	
Triballand	
Railroads	

Linear Search Line	
Identified Site, Multiple Sites, Receptor	  
NPL, DELNPL, Brownfield, Solid Waste Landfill (SWL), Hazardous Waste Triballand.....	 
Railroads	 

***Environmental FirstSearch
Sites Summary Report***

Target Property: SEGMENT B
MOJAVE CA 93501

JOB: BR RTP-B

TOTAL: 3 **GEOCODED:** 1 **NON GEOCODED:** 2 **SELECTED:** 3

DB Type	Site Name/ID/Status	Address	Dist/Dir	ElevDiff	Map ID	Page No.
SWL	DOLLAHITE AUTO WRECKING SWIS15-TI-1301/ACTIVE	6770 BACKUS ROAD MOJAVE CA	0.22 SE	N/A	1	2
TRIBALLAND	BUREAU OF INDIAN AFFAIRS CONTA BIA-93560	UNKNOWN CA 93560	NON GC	N/A		3
TRIBALLAND	BUREAU OF INDIAN AFFAIRS CONTA BIA-93501	UNKNOWN CA 93501	NON GC	N/A		3

Environmental FirstSearch
Site Detail Report

Target Property: SEGMENT B
MOJAVE CA 93501

JOB: BRRTP-B

SWL

SEARCH ID: 1 **DIST/DIR:** 0.22 SE **ELEVATION:** **MAP ID:** 1

NAME: DOLLAHITE AUTO WRECKING
ADDRESS: 6770 BACKUS ROAD
MOJAVE CA
KERN
CONTACT:
SOURCE:

REV: 01/19/05
ID1: SWIS15-TI-1301
ID2:
STATUS: ACTIVE
PHONE:

SITE OPERATOR INFORMATION:

SITE OPERATOR INFORMATION:

Operator: *Dollahite Auto Wrecking*
Operator Address: *6770 Backus Road Mojave CA*
Permit Date:
Permit Status:
Land Use Name:
GIS Source for LAT and LONG: *GPS*

Operator: *Dollahite Auto Wrecking*
Operator Address: *6770 Backus Road Mojave CA*
Permit Date:
Permit Status:
Land Use Name:
GIS Source for LAT and LONG: *GPS*

SITE ACTIVITY INFORMATION:

SITE ACTIVITY INFORMATION:

Activity: *Auto Dismantler*
Accepted Waste: *Tires*
Operational Status: *Active*
Regulatory Status: *Not Currently Regulated*
Closure Date:
Closure Type:
Permitted Throughput with Units:
Permitted Capacity with Units: *Tires*
Remaining Capacity with Units (landfills only):
Permitted Total Acreage: 0
Permitted Disposal Acreage:
Last Tire Inspection Count: 450
Last Tire Inspection Count Date: 11/9/2000
Original Tire Inspection Count:
Last Tire Inspection Count Date:
Inspection Frequency: *None*

Activity: *Auto Dismantler*
Accepted Waste: *Tires*
Operational Status: *Active*
Regulatory Status: *Not Currently Regulated*
Closure Date:
Closure Type:
Permitted Throughput with Units:
Permitted Capacity with Units: *Tires*
Remaining Capacity with Units (landfills only):
Permitted Total Acreage: 0

- Continued on next page -

Environmental FirstSearch
Site Detail Report

Target Property: SEGMENT B
MOJAVE CA 93501

JOB: BRRTP-B

SWL

SEARCH ID: 1 **DIST/DIR:** 0.22 SE **ELEVATION:** **MAP ID:** 1

NAME: DOLLAHITE AUTO WRECKING
ADDRESS: 6770 BACKUS ROAD
MOJAVE CA
KERN

REV: 01/19/05
ID1: SWIS15-TI-1301
ID2:
STATUS: ACTIVE
PHONE:

CONTACT:
SOURCE:

Permitted Disposal Acreage:

Last Tire Inspection Count: 450
Last Tire Inspection Count Date: 11/9/2000
Original Tire Inspection Count:
Last Tire Inspection Count Date:
Inspection Frequency: None

SITE OWNER INFORMATION:

SITE OWNER INFORMATION:

Owner: Dollahite Auto Wrecking
Owner Phone: 6618242108
Owner Address: 6770 Backus Road

Owner: Dollahite Auto Wrecking
Owner Phone: 6618242108
Owner Address: 6770 Backus Road

**Environmental FirstSearch
Site Detail Report**

Target Property: SEGMENT B
MOJAVE CA 93501

JOB: BR RTP-B

TRIBALLAND

SEARCH ID: 3 **DIST/DIR:** NON GC **ELEVATION:** **MAP ID:**

NAME: BUREAU OF INDIAN AFFAIRS CONTACT INFORMATION	REV: 01/15/08
ADDRESS: UNKNOWN	ID1: BIA-93560
CA 93560	ID2:
KERN	STATUS:
CONTACT:	PHONE:
SOURCE: BIA	

BUREAU OF INDIAN AFFAIRS CONTACT INFORMATION

OFFICE:	Pacific Regional Office
CONTACT:	CLAY GREGORY, REGIONAL DIRECTOR
ADDRESS:	2800 Cottage Way
	Sacramento CA 95825
PHONE:	Phone: 916-978-6000
FAX:	Fax: 916-978-6099

The Native American Consultation Database (NACD) is a tool for identifying consultation contacts for Indian tribes, Alaska Native villages and corporations, and Native Hawaiian organizations. The database is not a comprehensive source of information, but it does provide a starting point for the consultation process by identifying tribal leaders and NAGPRA contacts. This database can be accessed online at the following web address <http://home.nps.gov/nacd/>

TRIBALLAND

SEARCH ID: 2 **DIST/DIR:** NON GC **ELEVATION:** **MAP ID:**

NAME: BUREAU OF INDIAN AFFAIRS CONTACT INFORMATION	REV: 01/15/08
ADDRESS: UNKNOWN	ID1: BIA-93501
CA 93501	ID2:
KERN	STATUS:
CONTACT:	PHONE:
SOURCE: BIA	

BUREAU OF INDIAN AFFAIRS CONTACT INFORMATION

OFFICE:	Pacific Regional Office
CONTACT:	CLAY GREGORY, REGIONAL DIRECTOR
ADDRESS:	2800 Cottage Way
	Sacramento CA 95825
PHONE:	Phone: 916-978-6000
FAX:	Fax: 916-978-6099

The Native American Consultation Database (NACD) is a tool for identifying consultation contacts for Indian tribes, Alaska Native villages and corporations, and Native Hawaiian organizations. The database is not a comprehensive source of information, but it does provide a starting point for the consultation process by identifying tribal leaders and NAGPRA contacts. This database can be accessed online at the following web address <http://home.nps.gov/nacd/>

Environmental FirstSearch Descriptions

NPL: EPA NATIONAL PRIORITY LIST - The National Priorities List is a list of the worst hazardous waste sites that have been identified by Superfund. Sites are only put on the list after they have been scored using the Hazard Ranking System (HRS), and have been subjected to public comment. Any site on the NPL is eligible for cleanup using Superfund Trust money.

A Superfund site is any land in the United States that has been contaminated by hazardous waste and identified by the Environmental Protection Agency (EPA) as a candidate for cleanup because it poses a risk to human health and/or the environment.

FINAL - Currently on the Final NPL

PROPOSED - Proposed for NPL

NPL DELISTED: EPA NATIONAL PRIORITY LIST Subset - Database of delisted NPL sites. The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

DELISTED - Deleted from the Final NPL

CERCLIS: EPA COMPREHENSIVE ENVIRONMENTAL RESPONSE COMPENSATION AND LIABILITY INFORMATION SYSTEM (CERCLIS)- CERCLIS is a database of potential and confirmed hazardous waste sites at which the EPA Superfund program has some involvement. It contains sites that are either proposed to be or are on the National Priorities List (NPL) as well as sites that are in the screening and assessment phase for possible inclusion on the NPL.

PART OF NPL- Site is part of NPL site

DELETED - Deleted from the Final NPL

FINAL - Currently on the Final NPL

NOT PROPOSED - Not on the NPL

NOT VALID - Not Valid Site or Incident

PROPOSED - Proposed for NPL

REMOVED - Removed from Proposed NPL

SCAN PLAN - Pre-proposal Site

WITHDRAWN - Withdrawn

NFRAP: EPA COMPREHENSIVE ENVIRONMENTAL RESPONSE COMPENSATION AND LIABILITY INFORMATION SYSTEM ARCHIVED SITES - database of Archive designated CERCLA sites that, to the best of EPA's knowledge, assessment has been completed and has determined no further steps will be taken to list this site on the National Priorities List (NPL). This decision does not necessarily mean that there is no hazard associated with a given site; it only means that, based upon available information, the location is not judged to be a potential NPL site.

NFRAP - No Further Remedial Action Plan

P - Site is part of NPL site

D - Deleted from the Final NPL

F - Currently on the Final NPL

N - Not on the NPL

O - Not Valid Site or Incident

P - Proposed for NPL

R - Removed from Proposed NPL

S - Pre-proposal Site

W - Withdrawn

RCRA COR ACT: EPA RESOURCE CONSERVATION AND RECOVERY INFORMATION SYSTEM SITES - Database of hazardous waste information contained in the Resource Conservation and Recovery Act Information (RCRAInfo), a national program management and inventory system about hazardous waste handlers. In general, all generators, transporters, treaters, storers, and disposers of hazardous waste are required to provide information about their activities to state environmental agencies. These agencies, in turn pass on the information to regional and national EPA offices. This regulation is governed by the Resource Conservation and Recovery Act (RCRA), as amended by the Hazardous and Solid Waste Amendments of 1984.

RCRAInfo facilities that have reported violations and subject to corrective actions.

RCRA TSD: EPA RESOURCE CONSERVATION AND RECOVERY INFORMATION SYSTEM TREATMENT, STORAGE, and DISPOSAL FACILITIES. - Database of hazardous waste information contained in the Resource Conservation and Recovery Act Information (RCRAInfo), a national program management and inventory system about hazardous waste handlers. In general, all generators, transporters, treaters, storers, and disposers of hazardous waste are required to provide information about their activities to state environmental agencies. These agencies, in turn pass on the information to regional and national EPA offices. This regulation is governed by the Resource Conservation and Recovery Act (RCRA), as amended by the Hazardous and Solid Waste Amendments of 1984.

Facilities that treat, store, dispose, or incinerate hazardous waste.

RCRA GEN: EPAMA DEP/CT DEP RESOURCE CONSERVATION AND RECOVERY INFORMATION SYSTEM GENERATORS - Database of hazardous waste information contained in the Resource Conservation and Recovery Act Information (RCRAInfo), a national program management and inventory system about hazardous waste handlers. In general, all generators, transporters, treaters, storers, and disposers of hazardous waste are required to provide information about their activities to state environmental agencies. These agencies, in turn pass on the information to regional and national EPA offices. This regulation is governed by the Resource Conservation and Recovery Act (RCRA), as amended by the Hazardous and Solid Waste Amendments of 1984.

Facilities that generate or transport hazardous waste or meet other RCRA requirements.

LGN - Large Quantity Generators

SGN - Small Quantity Generators

VGN - Conditionally Exempt Generator.

Included are RAATS (RCRA Administrative Action Tracking System) and CMEL (Compliance Monitoring & Enforcement List) facilities.

CONNECTICUT HAZARDOUS WASTE MANIFEST - Database of all shipments of hazardous waste within, into or from Connecticut. The data includes date of shipment, transporter and TSD info, and material shipped and quantity. This data is appended to the details of existing generator records.

MASSACHUSETTES HAZARDOUS WASTE GENERATOR - database of generators that are regulated under the MA DEP.

VQN-MA = generates less than 220 pounds or 27 gallons per month of hazardous waste or waste oil.

SQN-MA = generates 220 to 2,200 pounds or 27 to 270 gallons per month of waste oil.

LQG-MA = generates greater than 2,200 lbs of hazardous waste or waste oil per month.

RCRA NLR: EPA RESOURCE CONSERVATION AND RECOVERY INFORMATION SYSTEM SITES - Database of hazardous waste information contained in the Resource Conservation and Recovery Act Information (RCRAInfo), a national program management and inventory system about hazardous waste handlers. In general, all generators, transporters, treaters, storers, and disposers of hazardous waste are required to provide information about their activities to state environmental agencies. These agencies, in turn pass on the information to regional and national EPA offices. This regulation is governed by the Resource Conservation and Recovery Act (RCRA), as amended by the Hazardous and Solid Waste Amendments of 1984.

Facilities not currently classified by the EPA but are still included in the RCRAInfo database. Reasons for non classification:

Failure to report in a timely matter.

No longer in business.

No longer in business at the listed address.

No longer generating hazardous waste materials in quantities which require reporting.

ERNS: EPANRC EMERGENCY RESPONSE NOTIFICATION SYSTEM (ERNS) - Database of incidents reported to the National Response Center. These incidents include chemical spills, accidents involving chemicals (such as fires or explosions), oil spills, transportation accidents that involve oil or chemicals, releases of radioactive materials, sightings of oil sheens on bodies of water, terrorist incidents involving chemicals, incidents where illegally dumped chemicals have been found, and drills intended to prepare responders to handle these kinds of incidents. Data since January 2001 has been received from the National Response System database as the EPA no longer maintains this data.

Tribal Lands: DOI/BIA INDIAN LANDS OF THE UNITED STATES - Database of areas with boundaries established by treaty, statute, and (or) executive or court order, recognized by the Federal Government as territory in which American Indian tribes have primary governmental authority. The Indian Lands of the United States map layer shows areas of 640 acres or more, administered by the Bureau of Indian Affairs. Included are

Federally-administered lands within a reservation which may or may not be considered part of the reservation.
BUREAU OF INDIAN AFFAIRS CONTACT - Regional contact information for the Bureau of Indian Affairs offices.

State/Tribal Sites: CA EPA SMBRPD / CAL SITES- The California Department of Toxic Substances Control (DTSC) has developed an electronic database system called Envirostor with information about sites that are known to be contaminated with hazardous substances as well as information on uncharacterized properties where further studies may reveal problems. The Site Mitigation and Brownfields Reuse Program Database (SMBRPD), formerly known as CalSites, is used primarily by DTSC's staff as an informational tool to evaluate and track activities at properties that may have been affected by the release of hazardous substances. The SMBRPD displays information in six categories, two of which are found in ST. The categories listed under ST are:

1. State Response Sites.
2. School Property Evaluation Program Properties (SCH)

Please Note: Our reports list the above sites as DB Type (STATE). Other categories found in the SMBRPD are listed in our reports in the DB Types OT and VC.

Each Category contains information on properties based upon the type of work taking place at the site. State Response Sites contains only known and potential hazardous substance release sites considered as posing the greatest threat to the public. School sites included in ST will be found within the SMBRPD's School Property Evaluation Program.

CORTESE LIST-Pursuant to Government Code Section 65962.5, the Hazardous Waste and Substances Sites List has been compiled by Cal/EPA, Hazardous Materials Data Management Program to provide information about the location of hazardous materials release sites. Cortese List sites that fall under DTSC's guidelines for State Response sites are included in our reports in the ST category as are qualifying sites from the Annual Work Plan (formerly Bond Expenditure Plan) and the historic ASPIS databases.

State Spills 90: CA EPA SLIC REGIONS 1 - 9- The California Regional Water Quality Control Boards maintain report of sites that have records of spills, leaks, investigation, and cleanups.

State/Tribal SWL: CA IWMB/SWRCB/COUNTY SWIS SOLID WASTE INFORMATION SYSTEM-The California Integrated Waste Management Board maintains a database on solid waste facilities, operations, and disposal sites throughout the state of California. The types of facilities found in this database include landfills, transfer stations, material recovery facilities, composting sites, transformation facilities, waste tire sites, and closed disposal sites. For more information on individual sites call the number listed in the source field..

Please Note: This database contains poor site location information for many sites in our reports; therefore, it may not be possible to locate or plot some sites in our reports.

WMUDS-The State Water Resources Control Board maintained the Waste Management Unit Database System (WMUDS). It is no longer updated. It tracked management units for several regulatory programs related to waste management and its potential impact on groundwater. Two of these programs (SWAT & TPCA) are no longer on-going regulatory programs as described below. Chapter 15 (SC15) is still an on-going regulatory program and information is updated periodically but not to the WMUDS database. The WMUDS System contains information from the following agency databases: Facility, Waste Management Unit (WMU), Waste Discharger System (WDS), SWAT, Chapter 15, TPCA, RCRA, Inspections, Violations, and Enforcement's.

Note: This database contains poor site location information for many sites in our reports; therefore, it may not be possible to locate or plot some sites in reports.

ORANGE COUNTY LANDFILLS LIST- A list maintained by the Orange County Health Department.

State/Tribal LUST: CA SWRCB/COUNTY LUSTIS- The State Water Resources Control Board maintains a database of sites with confirmed or unconfirmed leaking underground storage tanks. Information for this database is collected from the states regional boards quarterly and integrated with this database.

SAN DIEGO COUNTY LEAKING TANKS- The San Diego County Department of Environmental Health maintains a database of sites with confirmed or unconfirmed leaking underground storage tanks within its HE17/58 database. For more information on a specific file call the HazMat Duty Specialist at phone number listed in the source information field.

State/Tribal UST/AST: CA EPA/COUNTY/CITY ABOVEGROUND STORAGE TANKS LISTING-The Above Ground Petroleum Storage Act became State Law effective January 1, 1990. In general, the law requires owners or operators of AST's with petroleum products to file a storage statement and pay a fee by July 1, 1990 and every two years thereafter, take specific action to prevent spills, and in certain instances implement a groundwater monitoring program. This law does not apply to that portion of a tank facility associated with the

production oil and regulated by the State Division of Oil and Gas of the Dept. of Conservation.

SWEEPS / FIDS STATE REGISTERED UNDERGROUND STORAGE TANKS- Until 1994 the State Water Resources Control Board maintained a database of registered underground storage tanks statewide referred to as the SWEEPS System. The SWEEPS UST information was integrated with the CAL EPA's Facility Index System database (FIDS) which is a master index of information from numerous California agency environmental databases. That was last updated in 1994. We have included the UST information from the FIDS database in our reports for historical purposes to help our clients identify where tanks may possibly have existed. For more information on specific sites from individual paper files archived at the State Water Resources Control Board call the number listed with the source information.

INDIAN LANDS UNDERGROUND STORAGE TANKS LIST- A listing of underground storage tanks currently on Indian Lands under federal jurisdiction. California Indian Land USTS are administered by US EPA Region 9.

CUPA DATABASES & SOURCES- Definition of a CUPA: A Certified Unified Program Agency (CUPA) is a local agency that has been certified by the CAL EPA to implement six state environmental programs within the local agency's jurisdiction. These can be a county, city, or JPA (Joint Powers Authority). This program was established under the amendments to the California Health and Safety Code made by SB 1082 in 1994.

A Participating Agency (PA) is a local agency that has been designated by the local CUPA to administer one or more Unified Programs within their jurisdiction on behalf of the CUPA. A Designated Agency (DA) is an agency that has not been certified by the CUPA but is the responsible local agency that would implement the six unified programs until they are certified.

Please Note: We collect and maintains information regarding Underground Storage Tanks from the majority of the CUPAS and Participating Agencies in the State of California. These agencies typically do not maintain nor release such information on a uniform or consistent schedule; therefore, currency of the data may vary. Please look at the details on a specific site with a UST record in the First Search Report to determine the actual currency date of the record as provided by the relevant agency. Numerous efforts are made on a regular basis to obtain updated records.

State/Tribal IC: CA EPA DEED-RESTRICTED SITES LISTING- The California EPA's Department of Toxic Substances Control Board maintains a list of deed-restricted sites, properties where the DTSC has placed limits or requirements on the future use of the property due to varying levels of cleanup possible, practical or necessary at the site.

State/Tribal VCP: CA EPA SMBRPD / CAL SITES- The California Department of Toxic Substances Control (DTSC) has developed an electronic database system called Envirostor with information about sites that are known to be contaminated with hazardous substances as well as information on uncharacterized properties where further studies may reveal problems. The Site Mitigation and Brownfields Reuse Program Database (SMBRPD), formerly known as CalSites, is used primarily by DTSC's staff as an informational tool to evaluate and track activities at properties that may have been affected by the release of hazardous substances. The Voluntary Cleanup Program (VCP) category contains only those properties undergoing voluntary investigation and/or cleanup and which are listed in the Voluntary Cleanup Program.

Please Note: Our reports list the above sites as DB Type VC.

RADON: NTIS NATIONAL RADON DATABASE - EPA radon data from 1990-1991 national radon project collected for a variety of zip codes across the United States.

State Permits: CA EPA/COUNTY SAN DIEGO COUNTY HE17 PERMITS- The HE17/58 database tracks establishments issued permits and the status of their permits in relation to compliance with federal, state, and local regulations that the County oversees. It tracks if a site is a hazardous waste generator, TSD, gas station, has underground tanks, violations, or unauthorized releases. For more information on a specific file call the HazMat Duty Specialist at the phone number listed in the source information field.

SAN BERNARDINO COUNTY HAZARDOUS MATERIALS PERMITS- Handlers and Generators Permit Information Maintained by the Hazardous Materials Division.

State Other: CA EPA/COUNTY SMBRPD / CAL SITES- The California Department of Toxic Substances Control (DTSC) has developed an electronic database system called Envirostor with information about sites that are known to be contaminated with hazardous substances as well as information on uncharacterized properties where further studies may reveal problems. The Site Mitigation and Brownfields Reuse Program Database (SMBRPD), formerly known as CalSites, is used primarily by DTSC's staff as an informational tool to evaluate and track activities at properties that may have been affected by the release of hazardous substances.

The SMBRPD displays information in six categories, two of which are found in ST. The categories listed under

OT are:

1. Unconfirmed Properties Referred to Another Local or State Agency (REF)

2. Properties where a No Further Action Determination has been made (NFA)

Please Note: Our reports list the above sites as DB Type (OTHER). Other categories found in the SMBRPD are listed in our reports in the DB Types ST and VC.

LA COUNTY SITE MITIGATION COMPLAINT CONTROL LOG- The County of Los Angeles Public Health Investigation Compliant Control Log.

ORANGE COUNTY INDUSTRIAL SITE CLEANUPS- List maintained by the Orange County Environmental Health Agency.

RIVERSIDE COUNTY WASTE GENERATORS-A list of facilities in Riverside County which generate hazardous waste.

SACRAMENTO COUNTY MASTER HAZMAT LIST-Master list of facilities within Sacramento County with potentially hazardous materials.

SACRAMENTO COUNTY TOXIC SITE CLEANUPS-A list of sites where unauthorized releases of potentially hazardous materials have occurred.

HW Manifest: *CA EPA* DEPARTMENT OF TOXIC SUBSTANCES CONTROL HAZARDOUS WASTE MANIFEST INVENTORY-Records maintained by the CA DTSC of Hazardous Waste Manifests used to track and document the transport of hazardous waste from a generator's site to the site of its final disposition.

Environmental FirstSearch Database Sources

NPL: *EPA* Environmental Protection Agency

Updated quarterly

NPL DELISTED: *EPA* Environmental Protection Agency

Updated quarterly

CERCLIS: *EPA* Environmental Protection Agency

Updated quarterly

NFRAP: *EPA* Environmental Protection Agency.

Updated quarterly

RCRA COR ACT: *EPA* Environmental Protection Agency.

Updated quarterly

RCRA TSD: *EPA* Environmental Protection Agency.

Updated quarterly

RCRA GEN: *EPA/MA DEP/CT DEP* Environmental Protection Agency, Massachusetts Department of Environmental Protection, Connecticut Department of Environmental Protection

Updated quarterly

RCRA NLR: *EPA* Environmental Protection Agency

Updated quarterly

ERNS: *EPA/NRC* Environmental Protection Agency

Updated annually

Tribal Lands: *DOI/BIA* United States Department of the Interior

Updated annually

State/Tribal Sites: *CA EPA* The CAL EPA, Depart. Of Toxic Substances Control
Phone: (916) 323-3400

Updated quarterly/when available

State Spills 90: CA EPA The California State Water Resources Control Board

Updated when available

State/Tribal SWL: CA IWMB/SWRCB/COUNTY The California Integrated Waste Management Board
Phone:(916) 255-2331
The State Water Resources Control Board
Phone:(916) 227-4365
Orange County Health Department

Updated quarterly/when available

State/Tribal LUST: CA SWRCB/COUNTY The California State Water Resources Control Board
Phone:(916) 227-4416
San Diego County Department of Environmental Health

Updated quarterly/when available

State/Tribal UST/AST: CA EPA/COUNTY/CITY The State Water Resources Control Board
Phone:(916) 227-4364
CAL EPA Department of Toxic Substances Control
Phone:(916)227-4404
US EPA Region 9 Underground Storage Tank Program
Phone: (415) 972-3372
ALAMEDA COUNTY CUPAS:
* County of Alameda Department of Environmental Health
* Cities of Berkeley, Fremont, Hayward, Livermore / Pleasanton, Newark, Oakland, San Leandro, Union
ALPINE COUNTY CUPA:
* Health Department (Only updated by agency sporadically)
AMADOR COUNTY CUPA:
* County of Amador Environmental Health Department
BUTTE COUNTY CUPA
* County of Butte Environmental Health Division (Only updated by agency biannually)
CALAVERAS COUNTY CUPA:
* County of Calaveras Environmental Health Department
COLUSA COUNTY CUPA:
* Environmental Health Dept.
CONTRA COSTA COUNTY CUPA:
* Hazardous Materials Program
DEL NORTE COUNTY CUPA:
* Department of Health and Social Services
EL DORADO COUNTY CUPAS:
* County of El Dorado Environmental Health - Solid Waste Div (Only updated by agency annually)
* County of El Dorado EMD Tahoe Division (Only updated by agency annually)
FRESNO COUNTY CUPA:
* Haz. Mat and Solid Waste Programs
GLENN COUNTY CUPA:
* Air Pollution Control District
HUMBOLDT COUNTY CUPA:
* Environmental Health Division
IMPERIAL COUNTY CUPA:
* Department of Planning and Building
INYO COUNTY CUPA:
* Environmental Health Department

KERN COUNTY CUPA:

- * County of Kern Environmental Health Department
- * City of Bakersfield Fire Department

KINGS COUNTY CUPA:

- * Environmental Health Services

LAKE COUNTY CUPA:

- * Division of Environmental Health

LASSEN COUNTY CUPA:

- * Department of Agriculture

LOS ANGELES COUNTY CUPAS:

- * County of Los Angeles Fire Department CUPA Data as maintained by the Los Angeles County Department of Public Works

- * County of Los Angeles Environmental Programs Division

- * Cities of Burbank, El Segundo, Glendale, Long Beach/Signal Hill, Los Angeles, Pasadena, Santa Fe Springs, Santa Monica, Torrance, Vernon

MADERA COUNTY CUPA:

- * Environmental Health Department

MARIN COUNTY CUPA:

- * County of Marin Office of Waste Management

- * City of San Rafael Fire Department

MARIPOSA COUNTY CUPA:

- * Health Department

MENDOCINO COUNTY CUPA:

- * Environmental Health Department

MERCED COUNTY CUPA:

- * Division of Environmental Health

MODOC COUNTY CUPA:

- * Department of Agriculture

MONO COUNTY CUPA:

- * Health Department

MONTEREY COUNTY CUPA:

- * Environmental Health Division

NAPA COUNTY CUPA:

- * Hazardous Materials Section

NEVADA COUNTY CUPA:

- * Environmental Health Department

ORANGE COUNTY CUPAS:

- * County of Orange Environmental Health Department

- * Cities of Anaheim, Fullerton, Orange, Santa Ana

- * County of Orange Environmental Health Department

PLACER COUNTY CUPAS:

- * County of Placer Division of Environmental Health Field Office

- * Tahoe City

- * City of Roseville Roseville Fire Department

PLUMAS COUNTY CUPA:

- * Environmental Health Department

RIVERSIDE COUNTY CUPA:

- * Environmental Health Department

SACRAMENTO COUNTY CUPA:

- * County Environmental Mgmt Dept, Haz. Mat. Div.

SAN BENITO COUNTY CUPA:

- * City of Hollister Environmental Service Department

SAN BERNARDINO COUNTY CUPAS:

- * County of San Bernardino Fire Department, Haz. Mat. Div.

- * City of Hesperia Hesperia Fire Prevention Department

- * City of Victorville Victorville Fire Department

SAN DIEGO COUNTY CUPA:

- * The San Diego County Dept. of Environmental Health HE 17/58

SAN FRANCISCO COUNTY CUPA:

- * Department of Public Health

SAN JOAQUIN COUNTY CUPA:

- * Environmental Health Division

SAN LUIS OBISPO COUNTY CUPAS:

- * County of San Luis Obispo Environmental Health Division
- * City of San Luis Obispo City Fire Department

SAN MATEO COUNTY CUPA:

- * Environmental Health Department

SANTA BARBARA COUNTY CUPA:

- * County Fire Dept Protective Services Division

SANTA CLARA COUNTY CUPAS:

- * County of Santa Clara Hazardous Materials Compliance Division
- * Santa Clara County Central Fire Protection District (Covers Campbell, Cupertino, Los Gatos, & Morgan Hill)
- * Cities of Gilroy, Milpitas, Mountain View, Palo Alto, San Jose Fire, Santa Clara, Sunnyvale

SANTA CRUZ COUNTY CUPA:

- * Environmental Health Department

SHASTA COUNTY CUPA:

- * Environmental Health Department

SIERRA COUNTY CUPA:

- * Health Department

SISKIYOU COUNTY CUPA:

- * Environmental Health Department

SONOMA COUNTY CUPAS:

- * County of Sonoma Department Of Environmental Health
- * Cities of Healdsburg / Sebastopol, Petaluma, Santa Rosa

STANISLAUS COUNTY CUPA:

- * Department of Environmental Resources Haz. Mat. Division

SUTTER COUNTY CUPA:

- * Department of Agriculture

TEHAMA COUNTY CUPA:

- * Department of Environmental Health

TRINITY COUNTY CUPA:

- * Department of Health

TULARE COUNTY CUPA:

- * Environmental Health Department

TUOLUMNE COUNTY CUPA:

- * Environmental Health

VENTURA COUNTY CUPAS:

- * County of Ventura Environmental Health Division
- * Cities of Oxnard, Ventura

YOLO COUNTY CUPA:

- * Environmental Health Department

YUBA COUNTY CUPA:

Updated quarterly/annually/when available

State/Tribal IC: CA EPA The California EPA Department of Toxic Substances Control.

Updated Updated quarterly/annually/when available

State/Tribal VCP: CA EPA The California EPA Department of Toxic Substances Control.

Updated Updated quarterly/annually/when available

RADON: NTIS Environmental Protection Agency, National Technical Information Services

Updated periodically

State Permits: CA EPA/COUNTY The San Diego County Depart. Of Environmental Health
Phone:(619) 338-2211
San Bernardino County Fire Department

Updated quarterly/when available

State Other: CA EPA/COUNTY The CAL EPA, Depart. Of Toxic Substances Control
Phone: (916) 323-3400
The Los Angeles County Hazardous Materials Division
Phone: (323) 890-7806
Orange County Environmental Health Agency
Phone: (714) 834-3536
Riverside County Department of Environmental Health, Hazardous Materials Management Division
Phone:(951) 358-5055
Sacramento County Environmental Management Department

Updated quarterly/when available

HW Manifest: CA EPA
CAL EPA, Department of Toxic Substances Control

Updated annually/when available

TRACK ► INFO SERVICES, LLC

Environmental FirstSearch™ Report

Target Property:

SEGMENT C1

MOJAVE CA 93501

Job Number: BRRTP-C1

PREPARED FOR:

Power Engineers, Inc.
731 E Ball Road Suite 100
Anaheim, CA 92805
(949) 280-7922

09-20-10



Tel: (866) 664-9981

Fax: (818) 249-4227

***Environmental FirstSearch
Site Information Report***

Request Date: 09-20-10
Requestor Name: Roya Compani
Standard: ASTM-05

Search Type: LINEAR
22.34 mile(s)
Job Number: BR RTP-C1
Filtered Report

Target Site: SEGMENT C1
MOJAVE CA 93501

Demographics

Sites: 4	Non-Geocoded: 3	Population: NA
Radon: NA		

Site Location

	<u>Degrees (Decimal)</u>	<u>Degrees (Min/Sec)</u>		<u>UTMs</u>
Longitude:	-118.328256	-118:19:42	Easting:	378748.318
Latitude:	34.973159	34:58:23	Northing:	3870674.705
Elevation:	N/A		Zone:	11

Comment

Comment:

Additional Requests/Services

Adjacent ZIP Codes: 1 Mile(s)

Services:

ZIP Code	City Name	ST	Dist/Dir	Sel
93560	ROSAMOND	CA	0.00 --	Y

	Requested?	Date
Fire Insurance Maps	No	
Aerial Photographs	No	
Historical Topos	No	
City Directories	No	
Title Search/Env Liens	No	
Municipal Reports	No	
Online Topos	No	

Environmental FirstSearch Search Summary Report

Target Site: SEGMENT C1
MOJAVE CA 93501

FirstSearch Summary

Database	Sel	Updated	Radius	Site	1/8	1/4	1/2	1/2>	ZIP	TOTALS
NPL	Y	08-01-10	1.00	0	0	0	0	0	0	0
NPL Delisted	Y	08-02-10	0.50	0	0	0	0	-	0	0
CERCLIS	Y	07-02-10	0.50	0	0	0	0	-	0	0
NFRAP	Y	07-02-10	0.50	0	0	0	0	-	0	0
RCRA COR ACT	Y	07-14-10	1.00	0	0	0	0	0	0	0
RCRA TSD	Y	07-14-10	0.50	0	0	0	0	-	0	0
RCRA GEN	Y	07-14-10	0.25	0	0	0	-	-	0	0
RCRA NLR	Y	07-14-10	0.12	0	0	-	-	-	0	0
Federal Brownfield	Y	07-06-10	0.25	0	0	0	-	-	0	0
ERNS	Y	07-23-10	0.12	0	0	-	-	-	0	0
Tribal Lands	Y	12-01-05	1.00	0	0	0	0	0	2	2
State/Tribal Sites	Y	08-04-10	1.00	0	0	0	0	0	0	0
State Spills 90	Y	06-22-10	0.12	0	0	-	-	-	0	0
State/Tribal SWL	Y	06-21-10	0.50	0	0	0	1	-	0	1
State/Tribal LUST	Y	06-22-10	0.50	0	0	0	0	-	0	0
State/Tribal UST/AST	Y	03-10-10	0.25	0	0	0	-	-	1	1
State/Tribal EC	Y	NA	0.25	0	0	0	-	-	0	0
State/Tribal IC	Y	08-04-10	0.25	0	0	0	-	-	0	0
State/Tribal VCP	Y	08-04-10	0.50	0	0	0	0	-	0	0
State/Tribal Brownfields	Y	NA	0.50	0	0	0	0	-	0	0
State Permits	Y	06-22-10	0.12	0	0	-	-	-	0	0
State Other	Y	08-04-10	0.25	0	0	0	-	-	0	0
Federal IC/EC	Y	08-26-10	0.50	0	0	0	0	-	0	0
HW Manifest	Y	08-02-10	0.12	0	0	-	-	-	0	0
- TOTALS -				0	0	0	1	0	3	4

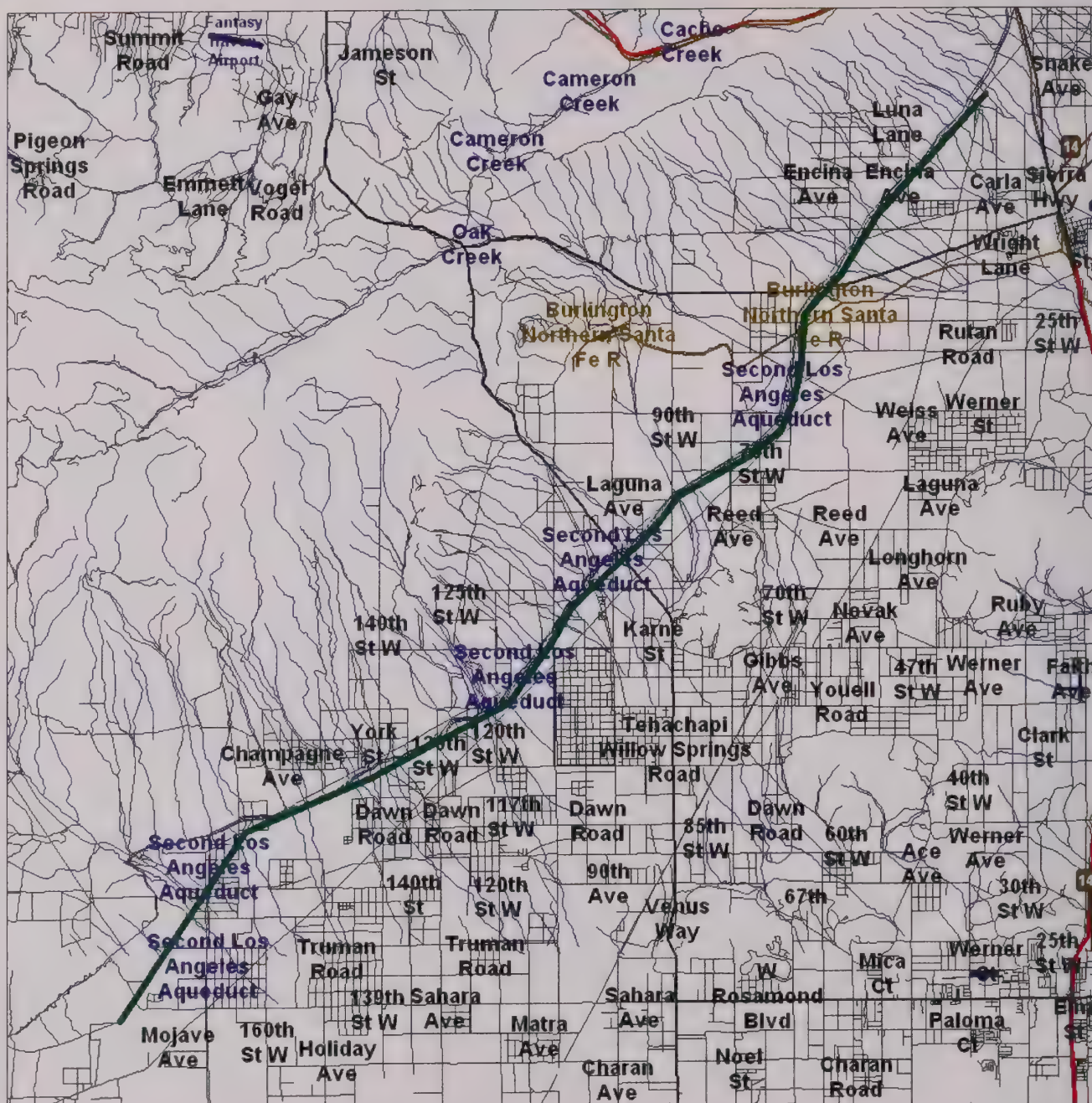
Notice of Disclaimer

Due to the limitations, constraints, inaccuracies and incompleteness of government information and computer mapping data currently available to TRACK Info Services, certain conventions have been utilized in preparing the locations of all federal, state and local agency sites residing in TRACK Info Services's databases. All EPA NPL and state landfill sites are depicted by a rectangle approximating their location and size. The boundaries of the rectangles represent the eastern and western most longitudes; the northern and southern most latitudes. As such, the mapped areas may exceed the actual areas and do not represent the actual boundaries of these properties. All other sites are depicted by a point representing their approximate address location and make no attempt to represent the actual areas of the associated property. Actual boundaries and locations of individual properties can be found in the files residing at the agency responsible for such information.

Waiver of Liability

Although TRACK Info Services uses its best efforts to research the actual location of each site, TRACK Info Services does not and can not warrant the accuracy of these sites with regard to exact location and size. All authorized users of TRACK Info Services's services proceeding are signifying an understanding of TRACK Info Services's searching and mapping conventions, and agree to waive any and all liability claims associated with search and map results showing incomplete and or inaccurate site locations.

SEGMENT C1 , MOJAVE CA 93501



Source: U.S. Census TIGER Files

Linear Search Line
 Identified Site, Multiple Sites, Receptor
 NPL, DELNPL, Brownfield, Solid Waste Landfill (SWL), Hazardous Waste
 Triballand.....
 Railroads.....

Environmental FirstSearch Sites Summary Report

Target Property: SEGMENT C1
MOJAVE CA 93501

JOB: BR RTP-C1

TOTAL: 4 **GEOCODED:** 1 **NON GEOCODED:** 3 **SELECTED:** 4

DB Type	Site Name/ID/Status	Address	Dist/Dir	ElevDiff	Map ID	Page No.
SWL	RUSSELL WTS (CHP REFERRAL) SWIS15-TI-1300/ACTIVE	ARROYO AVE. WEST OF HWY. 14 MOJAVE CA 93502	0.36 NW	N/A	1	1
TRIBALLAND	BUREAU OF INDIAN AFFAIRS CONTA BIA-93560	UNKNOWN CA 93560	NON GC	N/A		2
TRIBALLAND	BUREAU OF INDIAN AFFAIRS CONTA BIA-93501	UNKNOWN CA 93501	NON GC	N/A		2
UST	NORTHROP CORPORATION, ADVANCED TISID-STATE21075/ACTIVE	0 170TH ST W. ROSAMOND ROSAMOND CA 93560	NON GC	N/A		3

Environmental FirstSearch
Site Detail Report

Target Property: SEGMENT C1
MOJAVE CA 93501

JOB: BRRTP-C1

SWL

SEARCH ID: 1	DIST/DIR: 0.36 NW	ELEVATION:	MAP ID: 1
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NAME: RUSSELL WTS (CHP REFERRAL)
ADDRESS: ARROYO AVE. WEST OF HWY. 14
MOJAVE CA 93502
KERN

REV: 01/26/01
ID1: SWIS15-TI-1300
ID2:
STATUS: ACTIVE
PHONE:

CONTACT:
SOURCE:

Activity: *Minor Waste Tire Facility*
Accepted Waste: *Tires*
Operational Status: *Active*
Regulatory Status: *Unpermitted*
Closure Date:
Closure Type:
Permitted Throughput with Units:
Permitted Capacity with Units: *Tires*
Remaining Capacity with Units (landfills only):
Permitted Total Acreage: 0
Permitted Disposal Acreage:
Last Tire Inspection Count: 0
Last Tire Inspection Count Date: 10/31/2002
Original Tire Inspection Count:
Last Tire Inspection Count Date:
Inspection Frequency: *None*

Environmental FirstSearch Site Detail Report

Target Property: SEGMENT C1
MOJAVE CA 93501

JOB: BR RTP-C1

TRIBALLAND

SEARCH ID: 4 DIST/DIR: NON GC ELEVATION: MAP ID:

NAME: BUREAU OF INDIAN AFFAIRS CONTACT INFORMATION
ADDRESS: UNKNOWN
CA 93560
KERN
CONTACT: BIA
SOURCE: BIA
REV: 01/15/08
ID1: BIA-93560
ID2:
STATUS:
PHONE:

BUREAU OF INDIAN AFFAIRS CONTACT INFORMATION

OFFICE: Pacific Regional Office
CONTACT: CLAY GREGORY, REGIONAL DIRECTOR
ADDRESS: 2800 Cottage Way
Sacramento CA 95825
PHONE: 916-978-6000
FAX: 916-978-6099

The Native American Consultation Database (NACD) is a tool for identifying consultation contacts for Indian tribes, Alaska Native villages and corporations, and Native Hawaiian organizations. The database is not a comprehensive source of information, but it does provide a starting point for the consultation process by identifying tribal leaders and NAGPRA contacts. This database can be accessed online at the following web address
<http://home.nps.gov/nacd/>

TRIBALLAND

SEARCH ID: 3 DIST/DIR: NON GC ELEVATION: MAP ID:

NAME: BUREAU OF INDIAN AFFAIRS CONTACT INFORMATION
ADDRESS: UNKNOWN
CA 93501
KERN
CONTACT: BIA
SOURCE: BIA
REV: 01/15/08
ID1: BIA-93501
ID2:
STATUS:
PHONE:

BUREAU OF INDIAN AFFAIRS CONTACT INFORMATION

OFFICE: Pacific Regional Office
CONTACT: CLAY GREGORY, REGIONAL DIRECTOR
ADDRESS: 2800 Cottage Way
Sacramento CA 95825
PHONE: 916-978-6000
FAX: 916-978-6099

The Native American Consultation Database (NACD) is a tool for identifying consultation contacts for Indian tribes, Alaska Native villages and corporations, and Native Hawaiian organizations. The database is not a comprehensive source of information, but it does provide a starting point for the consultation process by identifying tribal leaders and NAGPRA contacts. This database can be accessed online at the following web address
<http://home.nps.gov/nacd/>

Environmental FirstSearch Site Detail Report

Target Property: SEGMENT C1
MOJAVE CA 93501

JOB: BRRTP-C1

UST

SEARCH ID: 2	DIST/DIR: NON GC	ELEVATION:	MAP ID:
---------------------	-------------------------	-------------------	----------------

NAME: NORTHROP CORPORATION, ADVANCED
ADDRESS: 0 170TH ST W. ROSAMOND
ROSAMOND CA 93560
Kern

REV: 01/01/94
ID1: TISID-STATE21075
ID2:
STATUS: ACTIVE
PHONE:

CONTACT:
SOURCE:

UST HISTORICAL DATA

This site was listed in the FIDS Zip Code List as a UST site. The Office of Hazardous Data Management produced the FIDS list. The FIDS list is an index of names and locations of sites recorded in various California State environmental agency databases. It is sorted by zip code and as an index, details regarding the sites were never included.

The UST information included in FIDS as provided by the Office of Hazardous Data Management was originally collected from the SWEEPS database. The SWEEPS database recorded Underground Storage Tanks and was maintained by the State Water Resources Control Board (SWRCB). That agency no longer maintains the SWEEPS database and last updated it in 1994. The last release of that 1994 database was in 1997.

Oversight of Underground Storage Tanks within California is now conducted by Certified Unified Program Agencies referred to as CUPA s. There are approximately 102 CUPA s and Local Oversight Programs (LOP s) in the State of California. Most are city or county government agencies. As of 1998, all sites or facilities with underground storage tanks were required by Federal mandate to obtain certification by designated UST oversight agencies (in this case, CUPA s) that the UST/s at their location were upgraded or removed in adherence with the 1998 RCRA standards.

Information from the FIDS/SWEEPS lists were included in this report search to help identify where underground storage tanks may have existed that were not recorded in CUPA databases or lists collected by us. This may occur if a tank was removed prior to development of recent CUPA UST lists or never registered with a CUPA.

Environmental FirstSearch Descriptions

NPL: EPA NATIONAL PRIORITY LIST - The National Priorities List is a list of the worst hazardous waste sites that have been identified by Superfund. Sites are only put on the list after they have been scored using the Hazard Ranking System (HRS), and have been subjected to public comment. Any site on the NPL is eligible for cleanup using Superfund Trust money.

A Superfund site is any land in the United States that has been contaminated by hazardous waste and identified by the Environmental Protection Agency (EPA) as a candidate for cleanup because it poses a risk to human health and/or the environment.

FINAL - Currently on the Final NPL

PROPOSED - Proposed for NPL

NPL DELISTED: EPA NATIONAL PRIORITY LIST Subset - Database of delisted NPL sites. The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

DELISTED - Deleted from the Final NPL

CERCLIS: EPA COMPREHENSIVE ENVIRONMENTAL RESPONSE COMPENSATION AND LIABILITY INFORMATION SYSTEM (CERCLIS)- CERCLIS is a database of potential and confirmed hazardous waste sites at which the EPA Superfund program has some involvement. It contains sites that are either proposed to be or are on the National Priorities List (NPL) as well as sites that are in the screening and assessment phase for possible inclusion on the NPL.

PART OF NPL- Site is part of NPL site

DELETED - Deleted from the Final NPL

FINAL - Currently on the Final NPL

NOT PROPOSED - Not on the NPL

NOT VALID - Not Valid Site or Incident

PROPOSED - Proposed for NPL

REMOVED - Removed from Proposed NPL

SCAN PLAN - Pre-proposal Site

WITHDRAWN - Withdrawn

NFRAP: EPA COMPREHENSIVE ENVIRONMENTAL RESPONSE COMPENSATION AND LIABILITY INFORMATION SYSTEM ARCHIVED SITES - database of Archive designated CERCLA sites that, to the best of EPA's knowledge, assessment has been completed and has determined no further steps will be taken to list this site on the National Priorities List (NPL). This decision does not necessarily mean that there is no hazard associated with a given site; it only means that, based upon available information, the location is not judged to be a potential NPL site.

NFRAP - No Further Remedial Action Plan

P - Site is part of NPL site

D - Deleted from the Final NPL

F - Currently on the Final NPL

N - Not on the NPL

O - Not Valid Site or Incident

P - Proposed for NPL

R - Removed from Proposed NPL

S - Pre-proposal Site

W - Withdrawn

RCRA COR ACT: EPA RESOURCE CONSERVATION AND RECOVERY INFORMATION SYSTEM SITES - Database of hazardous waste information contained in the Resource Conservation and Recovery Act Information (RCRAInfo), a national program management and inventory system about hazardous waste handlers. In general, all generators, transporters, treaters, storers, and disposers of hazardous waste are required to provide information about their activities to state environmental agencies. These agencies, in turn pass on the information to regional and national EPA offices. This regulation is governed by the Resource Conservation and Recovery Act (RCRA), as amended by the Hazardous and Solid Waste Amendments of 1984. RCRAInfo facilities that have reported violations and subject to corrective actions.

RCRA TSD: EPA RESOURCE CONSERVATION AND RECOVERY INFORMATION SYSTEM TREATMENT, STORAGE, and DISPOSAL FACILITIES. - Database of hazardous waste information contained in the Resource Conservation and Recovery Act Information (RCRAInfo), a national program management and inventory system about hazardous waste handlers. In general, all generators, transporters, treaters, storers, and disposers of hazardous waste are required to provide information about their activities to state environmental agencies. These agencies, in turn pass on the information to regional and national EPA offices. This regulation is governed by the Resource Conservation and Recovery Act (RCRA), as amended by the Hazardous and Solid Waste Amendments of 1984.

Facilities that treat, store, dispose, or incinerate hazardous waste.

RCRA GEN: EPAMA DEP/CT DEP RESOURCE CONSERVATION AND RECOVERY INFORMATION SYSTEM GENERATORS - Database of hazardous waste information contained in the Resource Conservation and Recovery Act Information (RCRAInfo), a national program management and inventory system about hazardous waste handlers. In general, all generators, transporters, treaters, storers, and disposers of hazardous waste are required to provide information about their activities to state environmental agencies. These agencies, in turn pass on the information to regional and national EPA offices. This regulation is governed by the Resource Conservation and Recovery Act (RCRA), as amended by the Hazardous and Solid Waste Amendments of 1984.

Facilities that generate or transport hazardous waste or meet other RCRA requirements.

LGN - Large Quantity Generators

SGN - Small Quantity Generators

VGN - Conditionally Exempt Generator.

Included are RAATS (RCRA Administrative Action Tracking System) and CMEL (Compliance Monitoring & Enforcement List) facilities.

CONNECTICUT HAZARDOUS WASTE MANIFEST - Database of all shipments of hazardous waste within, into or from Connecticut. The data includes date of shipment, transporter and TSD info, and material shipped and quantity. This data is appended to the details of existing generator records.

MASSACHUSETTES HAZARDOUS WASTE GENERATOR - database of generators that are regulated under the MA DEP.

VQN-MA = generates less than 220 pounds or 27 gallons per month of hazardous waste or waste oil.

SQN-MA = generates 220 to 2,200 pounds or 27 to 270 gallons per month of waste oil.

LQG-MA = generates greater than 2,200 lbs of hazardous waste or waste oil per month.

RCRA NLR: EPA RESOURCE CONSERVATION AND RECOVERY INFORMATION SYSTEM SITES - Database of hazardous waste information contained in the Resource Conservation and Recovery Act Information (RCRAInfo), a national program management and inventory system about hazardous waste handlers. In general, all generators, transporters, treaters, storers, and disposers of hazardous waste are required to provide information about their activities to state environmental agencies. These agencies, in turn pass on the information to regional and national EPA offices. This regulation is governed by the Resource Conservation and Recovery Act (RCRA), as amended by the Hazardous and Solid Waste Amendments of 1984.

Facilities not currently classified by the EPA but are still included in the RCRAInfo database. Reasons for non classification:

Failure to report in a timely matter.

No longer in business.

No longer in business at the listed address.

No longer generating hazardous waste materials in quantities which require reporting.

ERNS: EPANRC EMERGENCY RESPONSE NOTIFICATION SYSTEM (ERNS) - Database of incidents reported to the National Response Center. These incidents include chemical spills, accidents involving chemicals (such as fires or explosions), oil spills, transportation accidents that involve oil or chemicals, releases of radioactive materials, sightings of oil sheens on bodies of water, terrorist incidents involving chemicals, incidents where illegally dumped chemicals have been found, and drills intended to prepare responders to handle these kinds of incidents. Data since January 2001 has been received from the National Response System database as the EPA no longer maintains this data.

Tribal Lands: DOI/BIA INDIAN LANDS OF THE UNITED STATES - Database of areas with boundaries established by treaty, statute, and (or) executive or court order, recognized by the Federal Government as territory in which American Indian tribes have primary governmental authority. The Indian Lands of the United States map layer shows areas of 640 acres or more, administered by the Bureau of Indian Affairs. Included are

Federally-administered lands within a reservation which may or may not be considered part of the reservation.
BUREAU OF INDIAN AFFAIRS CONTACT - Regional contact information for the Bureau of Indian Affairs offices.

State/Tribal Sites: CA EPA SMBRPD / CAL SITES- The California Department of Toxic Substances Control (DTSC) has developed an electronic database system called Envirostor with information about sites that are known to be contaminated with hazardous substances as well as information on uncharacterized properties where further studies may reveal problems. The Site Mitigation and Brownfields Reuse Program Database (SMBRPD), formerly known as CalSites, is used primarily by DTSC's staff as an informational tool to evaluate and track activities at properties that may have been affected by the release of hazardous substances. The SMBRPD displays information in six categories, two of which are found in ST. The categories listed under ST are:

1. State Response Sites.
2. School Property Evaluation Program Properties (SCH)

Please Note: Our reports list the above sites as DB Type (STATE). Other categories found in the SMBRPD are listed in our reports in the DB Types OT and VC.

Each Category contains information on properties based upon the type of work taking place at the site. State Response Sites contains only known and potential hazardous substance release sites considered as posing the greatest threat to the public. School sites included in ST will be found within the SMBRPD's School Property Evaluation Program.

CORTESE LIST-Pursuant to Government Code Section 65962.5, the Hazardous Waste and Substances Sites List has been compiled by Cal/EPA, Hazardous Materials Data Management Program to provide information about the location of hazardous materials release sites. Cortese List sites that fall under DTSC's guidelines for State Response sites are included in our reports in the ST category as are qualifying sites from the Annual Work Plan (formerly Bond Expenditure Plan) and the historic ASPIS databases.

State Spills 90: CA EPA SLIC REGIONS 1 - 9- The California Regional Water Quality Control Boards maintain report of sites that have records of spills, leaks, investigation, and cleanups.

State/Tribal SWL: CA IWMB/SWRCB/COUNTY SWIS SOLID WASTE INFORMATION SYSTEM-The California Integrated Waste Management Board maintains a database on solid waste facilities, operations, and disposal sites throughout the state of California. The types of facilities found in this database include landfills, transfer stations, material recovery facilities, composting sites, transformation facilities, waste tire sites, and closed disposal sites. For more information on individual sites call the number listed in the source field..

Please Note: This database contains poor site location information for many sites in our reports; therefore, it may not be possible to locate or plot some sites in our reports.

WMUDS-The State Water Resources Control Board maintained the Waste Management Unit Database System (WMUDS). It is no longer updated. It tracked management units for several regulatory programs related to waste management and its potential impact on groundwater. Two of these programs (SWAT & TPCA) are no longer on-going regulatory programs as described below. Chapter 15 (SC15) is still an on-going regulatory program and information is updated periodically but not to the WMUDS database. The WMUDS System contains information from the following agency databases: Facility, Waste Management Unit (WMU), Waste Discharger System (WDS), SWAT, Chapter 15, TPCA, RCRA, Inspections, Violations, and Enforcement's.

Note: This database contains poor site location information for many sites in our reports; therefore, it may not be possible to locate or plot some sites in reports.

ORANGE COUNTY LANDFILLS LIST- A list maintained by the Orange County Health Department.

State/Tribal LUST: CA SWRCB/COUNTY LUSTIS- The State Water Resources Control Board maintains a database of sites with confirmed or unconfirmed leaking underground storage tanks. Information for this database is collected from the states regional boards quarterly and integrated with this database.

SAN DIEGO COUNTY LEAKING TANKS- The San Diego County Department of Environmental Health maintains a database of sites with confirmed or unconfirmed leaking underground storage tanks within its HE17/58 database. For more information on a specific file call the HazMat Duty Specialist at phone number listed in the source information field.

State/Tribal UST/AST: CA EPA/COUNTY/CITY ABOVEGROUND STORAGE TANKS LISTING-The Above Ground Petroleum Storage Act became State Law effective January 1, 1990. In general, the law requires owners or operators of AST's with petroleum products to file a storage statement and pay a fee by July 1, 1990 and every two years thereafter, take specific action to prevent spills, and in certain instances implement a groundwater monitoring program. This law does not apply to that portion of a tank facility associated with the

production oil and regulated by the State Division of Oil and Gas of the Dept. of Conservation.

SWEEPS / FIDS STATE REGISTERED UNDERGROUND STORAGE TANKS- Until 1994 the State Water Resources Control Board maintained a database of registered underground storage tanks statewide referred to as the SWEEPS System. The SWEEPS UST information was integrated with the CAL EPA's Facility Index System database (FIDS) which is a master index of information from numerous California agency environmental databases. That was last updated in 1994. We have included the UST information from the FIDS database in our reports for historical purposes to help our clients identify where tanks may possibly have existed. For more information on specific sites from individual paper files archived at the State Water Resources Control Board call the number listed with the source information.

INDIAN LANDS UNDERGROUND STORAGE TANKS LIST- A listing of underground storage tanks currently on Indian Lands under federal jurisdiction. California Indian Land USTS are administered by US EPA Region 9.

CUPA DATABASES & SOURCES- Definition of a CUPA: A Certified Unified Program Agency (CUPA) is a local agency that has been certified by the CAL EPA to implement six state environmental programs within the local agency's jurisdiction. These can be a county, city, or JPA (Joint Powers Authority). This program was established under the amendments to the California Health and Safety Code made by SB 1082 in 1994.

A Participating Agency (PA) is a local agency that has been designated by the local CUPA to administer one or more Unified Programs within their jurisdiction on behalf of the CUPA. A Designated Agency (DA) is an agency that has not been certified by the CUPA but is the responsible local agency that would implement the six unified programs until they are certified.

Please Note: We collect and maintains information regarding Underground Storage Tanks from the majority of the CUPAS and Participating Agencies in the State of California. These agencies typically do not maintain nor release such information on a uniform or consistent schedule; therefore, currency of the data may vary. Please look at the details on a specific site with a UST record in the First Search Report to determine the actual currency date of the record as provided by the relevant agency. Numerous efforts are made on a regular basis to obtain updated records.

State/Tribal IC: CA EPA DEED-RESTRICTED SITES LISTING- The California EPA's Department of Toxic Substances Control Board maintains a list of deed-restricted sites, properties where the DTSC has placed limits or requirements on the future use of the property due to varying levels of cleanup possible, practical or necessary at the site.

State/Tribal VCP: CA EPA SMBRPD / CAL SITES- The California Department of Toxic Substances Control (DTSC) has developed an electronic database system called Envirostor with information about sites that are known to be contaminated with hazardous substances as well as information on uncharacterized properties where further studies may reveal problems. The Site Mitigation and Brownfields Reuse Program Database (SMBRPD), formerly known as CalSites, is used primarily by DTSC's staff as an informational tool to evaluate and track activities at properties that may have been affected by the release of hazardous substances. The Voluntary Cleanup Program (VCP) category contains only those properties undergoing voluntary investigation and/or cleanup and which are listed in the Voluntary Cleanup Program.

Please Note: Our reports list the above sites as DB Type VC.

RADON: NTIS NATIONAL RADON DATABASE - EPA radon data from 1990-1991 national radon project collected for a variety of zip codes across the United States.

State Permits: CA EPA/COUNTY SAN DIEGO COUNTY HE17 PERMITS- The HE17/58 database tracks establishments issued permits and the status of their permits in relation to compliance with federal, state, and local regulations that the County oversees. It tracks if a site is a hazardous waste generator, TSD, gas station, has underground tanks, violations, or unauthorized releases. For more information on a specific file call the HazMat Duty Specialist at the phone number listed in the source information field.

SAN BERNARDINO COUNTY HAZARDOUS MATERIALS PERMITS- Handlers and Generators Permit Information Maintained by the Hazardous Materials Division.

State Other: CA EPA/COUNTY SMBRPD / CAL SITES- The California Department of Toxic Substances Control (DTSC) has developed an electronic database system called Envirostor with information about sites that are known to be contaminated with hazardous substances as well as information on uncharacterized properties where further studies may reveal problems. The Site Mitigation and Brownfields Reuse Program Database (SMBRPD), formerly known as CalSites, is used primarily by DTSC's staff as an informational tool to evaluate and track activities at properties that may have been affected by the release of hazardous substances.

The SMBRPD displays information in six categories, two of which are found in ST. The categories listed under

OT are:

1. Unconfirmed Properties Referred to Another Local or State Agency (REF)

2. Properties where a No Further Action Determination has been made (NFA)

Please Note: Our reports list the above sites as DB Type (OTHER). Other categories found in the SMBRPD are listed in our reports in the DB Types ST and VC.

LA COUNTY SITE MITIGATION COMPLAINT CONTROL LOG- The County of Los Angeles Public Health Investigation Compliant Control Log.

ORANGE COUNTY INDUSTRIAL SITE CLEANUPS- List maintained by the Orange County Environmental Health Agency.

RIVERSIDE COUNTY WASTE GENERATORS-A list of facilities in Riverside County which generate hazardous waste.

SACRAMENTO COUNTY MASTER HAZMAT LIST-Master list of facilities within Sacramento County with potentially hazardous materials.

SACRAMENTO COUNTY TOXIC SITE CLEANUPS-A list of sites where unauthorized releases of potentially hazardous materials have occurred.

HW Manifest: *CA EPA* DEPARTMENT OF TOXIC SUBSTANCES CONTROL HAZARDOUS WASTE MANIFEST INVENTORY-Records maintained by the CA DTSC of Hazardous Waste Manifests used to track and document the transport of hazardous waste from a generator's site to the site of its final disposition.

Environmental FirstSearch Database Sources

NPL: EPA Environmental Protection Agency

Updated quarterly

NPL DELISTED: EPA Environmental Protection Agency

Updated quarterly

CERCLIS: EPA Environmental Protection Agency

Updated quarterly

NFRAP: EPA Environmental Protection Agency.

Updated quarterly

RCRA COR ACT: EPA Environmental Protection Agency.

Updated quarterly

RCRA TSD: EPA Environmental Protection Agency.

Updated quarterly

RCRA GEN: EPA/MA DEP/CT DEP Environmental Protection Agency, Massachusetts Department of Environmental Protection, Connecticut Department of Environmental Protection

Updated quarterly

RCRA NLR: EPA Environmental Protection Agency

Updated quarterly

ERNS: EPA/NRC Environmental Protection Agency

Updated annually

Tribal Lands: DOI/BIA United States Department of the Interior

Updated annually

State/Tribal Sites: CA EPA The CAL EPA, Depart. Of Toxic Substances Control
Phone: (916) 323-3400

Updated quarterly/when available

State Spills 90: CA EPA The California State Water Resources Control Board

Updated when available

State/Tribal SWL: CA IWMB/SWRCB/COUNTY The California Integrated Waste Management Board
Phone:(916) 255-2331
The State Water Resources Control Board
Phone:(916) 227-4365
Orange County Health Department

Updated quarterly/when available

State/Tribal LUST: CA SWRCB/COUNTY The California State Water Resources Control Board
Phone:(916) 227-4416
San Diego County Department of Environmental Health

Updated quarterly/when available

State/Tribal UST/AST: CA EPA/COUNTY/CITY The State Water Resources Control Board
Phone:(916) 227-4364
CAL EPA Department of Toxic Substances Control
Phone:(916)227-4404
US EPA Region 9 Underground Storage Tank Program
Phone: (415) 972-3372
ALAMEDA COUNTY CUPA:
* County of Alameda Department of Environmental Health
* Cities of Berkeley, Fremont, Hayward, Livermore / Pleasanton, Newark, Oakland, San Leandro, Union
ALPINE COUNTY CUPA:
* Health Department (Only updated by agency sporadically)
AMADOR COUNTY CUPA:
* County of Amador Environmental Health Department
BUTTE COUNTY CUPA
* County of Butte Environmental Health Division (Only updated by agency biannually)
CALAVERAS COUNTY CUPA:
* County of Calaveras Environmental Health Department
COLUSA COUNTY CUPA:
* Environmental Health Dept.
CONTRA COSTA COUNTY CUPA:
* Hazardous Materials Program
DEL NORTE COUNTY CUPA:
* Department of Health and Social Services
EL DORADO COUNTY CUPAS:
* County of El Dorado Environmental Health - Solid Waste Div (Only updated by agency annually)
* County of El Dorado EMD Tahoe Division (Only updated by agency annually)
FRESNO COUNTY CUPA:
* Haz. Mat and Solid Waste Programs
GLENN COUNTY CUPA:
* Air Pollution Control District
HUMBOLDT COUNTY CUPA:
* Environmental Health Division
IMPERIAL COUNTY CUPA:
* Department of Planning and Building
INYO COUNTY CUPA:
* Environmental Health Department

KERN COUNTY CUPA:

- * County of Kern Environmental Health Department
- * City of Bakersfield Fire Department

KINGS COUNTY CUPA:

- * Environmental Health Services

LAKE COUNTY CUPA:

- * Division of Environmental Health

LASSEN COUNTY CUPA:

- * Department of Agriculture

LOS ANGELES COUNTY CUPAS:

- * County of Los Angeles Fire Department CUPA Data as maintained by the Los Angeles County Department of Public Works

- * County of Los Angeles Environmental Programs Division

- * Cities of Burbank, El Segundo, Glendale, Long Beach/Signal Hill, Los Angeles, Pasadena, Santa Fe Springs, Santa Monica, Torrance, Vernon

MADERA COUNTY CUPA:

- * Environmental Health Department

MARIN COUNTY CUPA:

- * County of Marin Office of Waste Management

- * City of San Rafael Fire Department

MARIPOSA COUNTY CUPA:

- * Health Department

MENDOCINO COUNTY CUPA:

- * Environmental Health Department

MERCED COUNTY CUPA:

- * Division of Environmental Health

MODOC COUNTY CUPA:

- * Department of Agriculture

MONO COUNTY CUPA:

- * Health Department

MONTEREY COUNTY CUPA:

- * Environmental Health Division

NAPA COUNTY CUPA:

- * Hazardous Materials Section

NEVADA COUNTY CUPA:

- * Environmental Health Department

ORANGE COUNTY CUPAS:

- * County of Orange Environmental Health Department

- * Cities of Anaheim, Fullerton, Orange, Santa Ana

- * County of Orange Environmental Health Department

PLACER COUNTY CUPAS:

- * County of Placer Division of Environmental Health Field Office

- * Tahoe City

- * City of Roseville Roseville Fire Department

PLUMAS COUNTY CUPA:

- * Environmental Health Department

RIVERSIDE COUNTY CUPA:

- * Environmental Health Department

SACRAMENTO COUNTY CUPA:

- * County Environmental Mgmt Dept, Haz. Mat. Div.

SAN BENITO COUNTY CUPA:

- * City of Hollister Environmental Service Department

SAN BERNARDINO COUNTY CUPAS:

- * County of San Bernardino Fire Department, Haz. Mat. Div.

- * City of Hesperia Hesperia Fire Prevention Department

- * City of Victorville Victorville Fire Department

SAN DIEGO COUNTY CUPA:

- * The San Diego County Dept. of Environmental Health HE 17/58

SAN FRANCISCO COUNTY CUPA:

- * Department of Public Health

SAN JOAQUIN COUNTY CUPA:

- * Environmental Health Division

SAN LUIS OBISPO COUNTY CUPAS:

- * County of San Luis Obispo Environmental Health Division
- * City of San Luis Obispo City Fire Department

SAN MATEO COUNTY CUPA:

- * Environmental Health Department

SANTA BARBARA COUNTY CUPA:

- * County Fire Dept Protective Services Division

SANTA CLARA COUNTY CUPAS:

- * County of Santa Clara Hazardous Materials Compliance Division
- * Santa Clara County Central Fire Protection District (Covers Campbell, Cupertino, Los Gatos, & Morgan Hill)
- * Cities of Gilroy, Milpitas, Mountain View, Palo Alto, San Jose Fire, Santa Clara, Sunnyvale

SANTA CRUZ COUNTY CUPA:

- * Environmental Health Department

SHASTA COUNTY CUPA:

- * Environmental Health Department

SIERRA COUNTY CUPA:

- * Health Department

SISKIYOU COUNTY CUPA:

- * Environmental Health Department

SONOMA COUNTY CUPAS:

- * County of Sonoma Department Of Environmental Health
- * Cities of Healdsburg / Sebastopol, Petaluma, Santa Rosa

STANISLAUS COUNTY CUPA:

- * Department of Environmental Resources Haz. Mat. Division

SUTTER COUNTY CUPA:

- * Department of Agriculture

TEHAMA COUNTY CUPA:

- * Department of Environmental Health

TRINITY COUNTY CUPA:

- * Department of Health

TULARE COUNTY CUPA:

- * Environmental Health Department

TUOLUMNE COUNTY CUPA:

- * Environmental Health

VENTURA COUNTY CUPAS:

- * County of Ventura Environmental Health Division
- * Cities of Oxnard, Ventura

YOLO COUNTY CUPA:

- * Environmental Health Department

YUBA COUNTY CUPA:

Updated quarterly/annually/when available

State/Tribal IC: *CA EPA* The California EPA Department of Toxic Substances Control.

Updated Updated quarterly/annually/when available

State/Tribal VCP: *CA EPA* The California EPA Department of Toxic Substances Control.

Updated Updated quarterly/annually/when available

RADON: *NTIS* Environmental Protection Agency, National Technical Information Services

Updated periodically

State Permits: CA EPA/COUNTY The San Diego County Depart. Of Environmental Health
Phone:(619) 338-2211
San Bernardino County Fire Department

Updated quarterly/when available

State Other: CA EPA/COUNTY The CAL EPA, Depart. Of Toxic Substances Control
Phone: (916) 323-3400
The Los Angeles County Hazardous Materials Division
Phone: (323) 890-7806
Orange County Environmental Health Agency
Phone: (714) 834-3536
Riverside County Department of Environmental Health, Hazardous Materials Management Division
Phone:(951) 358-5055
Sacramento County Environmental Management Department

Updated quarterly/when available

HW Manifest: CA EPA
CAL EPA, Department of Toxic Substances Control

Updated annually/when available

TRACK ► INFO SERVICES, LLC

Environmental FirstSearch™ Report

Target Property:

SEGMENT C2

ROSAMOND CA 93560

Job Number: BRRTP-C2

PREPARED FOR:

Power Engineers, Inc.

731 E Ball Road Suite 100

Anaheim, CA 92805

(949) 280-7922

09-20-10



Tel: (866) 664-9981

Fax: (818) 249-4227

***Environmental FirstSearch
Site Information Report***

Request Date: 09-20-10
Requestor Name: Roya Compani
Standard: ASTM-05

Search Type: LINEAR
22.25 mile(s)
Job Number: BR RTP-C2
Filtered Report

Target Site: SEGMENT C2
ROSAMOND CA 93560

Demographics

Sites: 3	Non-Geocoded: 2	Population: NA
Radon: -0.1 - 0.6 PCI/L		

Site Location

	<u>Degrees (Decimal)</u>	<u>Degrees (Min/Sec)</u>		<u>UTMs</u>
Longitude:	-118.610737	-118:36:39	Easting:	352656.363
Latitude:	34.803219	34:48:12	Northing:	3852206.478
Elevation:	N/A		Zone:	11

Comment

Comment:RERUN

Additional Requests/Services

Adjacent ZIP Codes: 1 Mile(s)

Services:

<u>ZIP</u>					<u>Requested?</u> <u>Date</u>	
<u>Code</u>	<u>City Name</u>	<u>ST</u>	<u>Dist/Dir</u>	<u>Sel</u>		
93243	LEBEC	CA	0.00 --	Y	Fire Insurance Maps	No
93532	LAKE HUGHES	CA	0.00 --	Y	Aerial Photographs	No
93536	LANCASTER	CA	0.00 --	Y	Historical Topos	No
					City Directories	No
					Title Search/Env Liens	No
					Municipal Reports	No
					Online Topos	No

Environmental FirstSearch Search Summary Report

Target Site: SEGMENT C2

ROSAMOND CA 93560

FirstSearch Summary

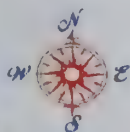
Database	Sel	Updated	Radius	Site	1/8	1/4	1/2	1/2>	ZIP	TOTALS
NPL	Y	08-01-10	1.00	0	0	0	0	0	0	0
NPL Delisted	Y	08-02-10	0.50	0	0	0	0	-	0	0
CERCLIS	Y	07-02-10	0.50	0	0	0	0	-	0	0
NFRAP	Y	07-02-10	0.50	0	0	0	0	-	0	0
RCRA COR ACT	Y	07-14-10	1.00	0	0	0	0	0	0	0
RCRA TSD	Y	07-14-10	0.50	0	0	0	0	-	0	0
RCRA GEN	Y	07-14-10	0.25	0	0	0	-	-	0	0
RCRA NLR	Y	07-14-10	0.12	0	0	-	-	-	0	0
Federal Brownfield	Y	07-06-10	0.25	0	0	0	-	-	0	0
ERNS	Y	07-23-10	0.12	0	0	-	-	-	0	0
Tribal Lands	Y	12-01-05	1.00	0	0	0	0	0	2	2
State/Tribal Sites	Y	08-04-10	1.00	0	0	0	0	0	0	0
State Spills 90	Y	06-22-10	0.12	0	0	-	-	-	0	0
State/Tribal SWL	Y	06-21-10	0.50	0	0	0	0	-	0	0
State/Tribal LUST	Y	06-22-10	0.50	0	0	0	1	-	0	1
State/Tribal UST/AST	Y	03-10-10	0.25	0	0	0	-	-	0	0
State/Tribal EC	Y	NA	0.25	0	0	0	-	-	0	0
State/Tribal IC	Y	08-04-10	0.25	0	0	0	-	-	0	0
State/Tribal VCP	Y	08-04-10	0.50	0	0	0	0	-	0	0
State/Tribal Brownfields	Y	NA	0.50	0	0	0	0	-	0	0
State Permits	Y	06-22-10	0.12	0	0	-	-	-	0	0
State Other	Y	08-04-10	0.25	0	0	0	-	-	0	0
Federal IC/EC	Y	08-26-10	0.50	0	0	0	0	-	0	0
HW Manifest	Y	08-02-10	0.12	0	0	-	-	-	0	0
- TOTALS -				0	0	0	1	0	2	3

Notice of Disclaimer

Due to the limitations, constraints, inaccuracies and incompleteness of government information and computer mapping data currently available to TRACK Info Services, certain conventions have been utilized in preparing the locations of all federal, state and local agency sites residing in TRACK Info Services's databases. All EPA NPL and state landfill sites are depicted by a rectangle approximating their location and size. The boundaries of the rectangles represent the eastern and western most longitudes; the northern and southern most latitudes. As such, the mapped areas may exceed the actual areas and do not represent the actual boundaries of these properties. All other sites are depicted by a point representing their approximate address location and make no attempt to represent the actual areas of the associated property. Actual boundaries and locations of individual properties can be found in the files residing at the agency responsible for such information.

Waiver of Liability

Although TRACK Info Services uses its best efforts to research the actual location of each site, TRACK Info Services does not and can not warrant the accuracy of these sites with regard to exact location and size. All authorized users of TRACK Info Services's services proceeding are signifying an understanding of TRACK Info Services's searching and mapping conventions, and agree to waive any and all liability claims associated with search and map results showing incomplete and or inaccurate site locations.



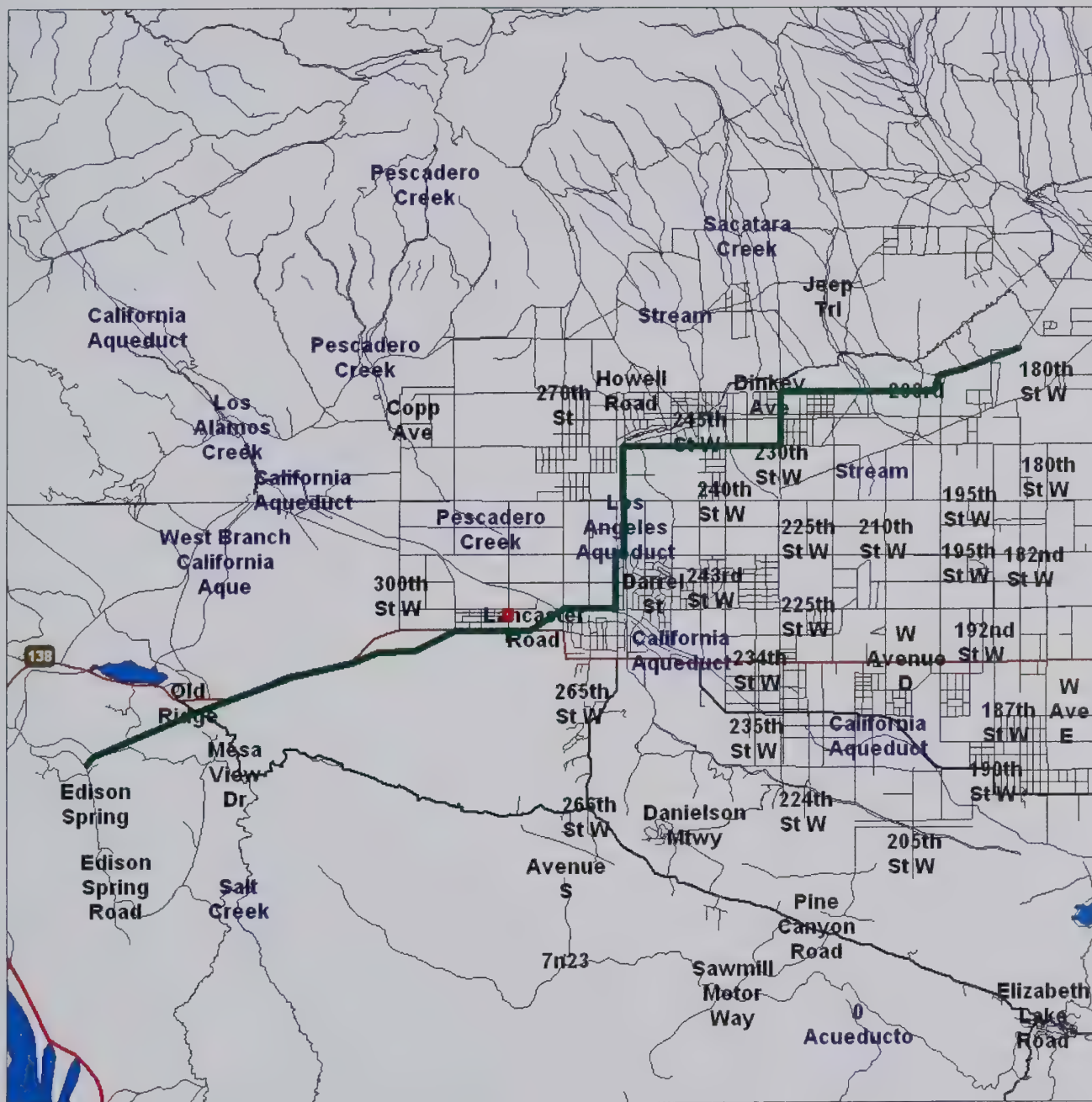
Environmental FirstSearch

1 Mile Radius from Line

Single Map:



SEGMENT C2 , ROSAMOND CA 93560



Source: U.S. Census TIGER Files

- Linear Search Line
- Identified Site, Multiple Sites, Receptor
- NPL, DELNPL, Brownfield, Solid Waste Landfill (SWL), Hazardous Waste
- Triballand
- Railroads



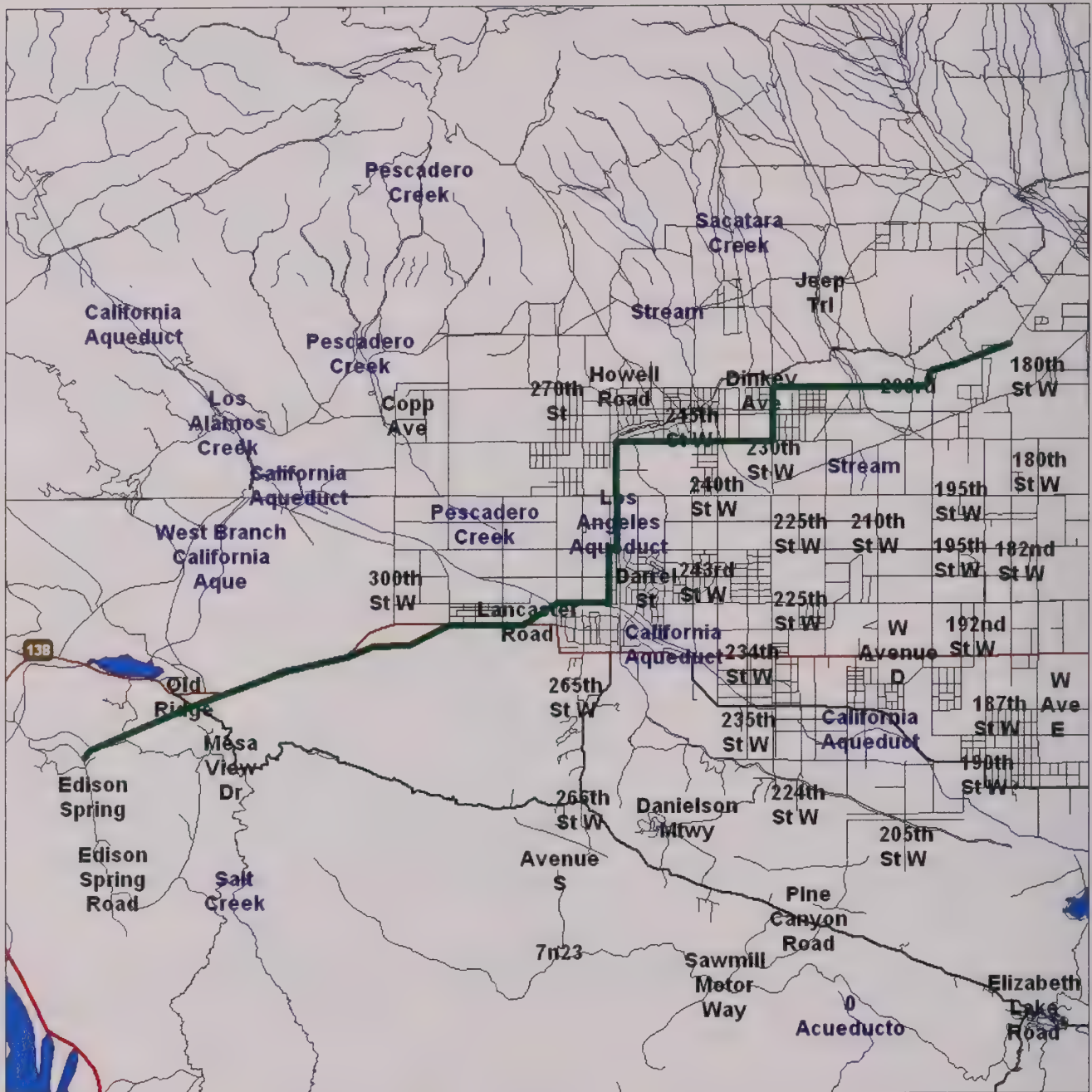


Environmental FirstSearch

1 Mile Radius from Line
ASTM-05: NPL, RCRACOR, STATE



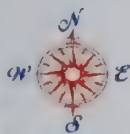
SEGMENT C2 , ROSAMOND CA 93560



Source: U.S. Census TIGER Files

Linear Search Line
Identified Site, Multiple Sites, Receptor
NPL, DELNPL, Brownfield, Solid Waste Landfill (SWL), Hazardous Waste
Triballand.....
Railroads





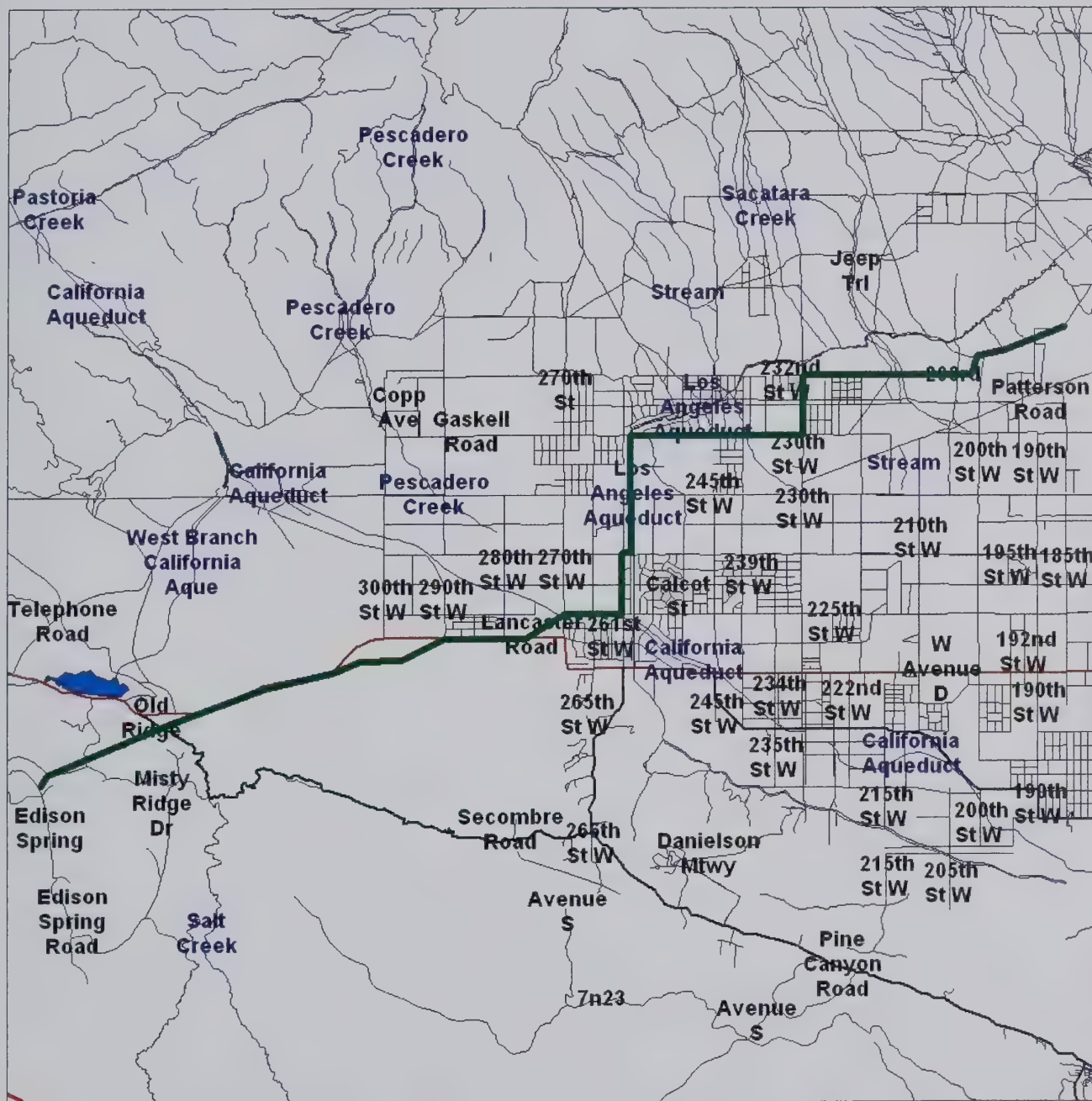
Environmental FirstSearch

.12 Mile Radius from Line

ASTM-05: Multiple Databases



SEGMENT C2 , ROSAMOND CA 93560



Source: U.S. Census TIGER Files

Linear Search Line
Identified Site, Multiple Sites, Receptor
NPL, DELNPL, Brownfield, Solid Waste Landfill (SWL), Hazardous Waste
Triballand
Railroads



Environmental FirstSearch

Sites Summary Report

Target Property: SEGMENT C2
ROSAMOND CA 93560

JOB: BR RTP-C2
RERUN

TOTAL: 3 **GEOCODED:** 1 **NON GEOCODED:** 2 **SELECTED:** 3

DB Type	Site Name/ID/Status	Address	Dist/Dir	ElevDiff	Map ID	Page No.
LUST	FUSON FARMS INC / USDA T0603700238/COMPLETED - CASE CLO	28041 AVE C-6 W LANCASTER CA 93534	0.30 NW	N/A	1	1
TRIBALLAND	BUREAU OF INDIAN AFFAIRS CONTA BIA-93532	UNKNOWN CA 93532	NON GC	N/A		2
TRIBALLAND	BUREAU OF INDIAN AFFAIRS CONTA BIA-93560	UNKNOWN CA 93560	NON GC	N/A		2

Environmental FirstSearch Site Detail Report

Target Property: SEGMENT C2
ROSAMOND CA 93560

JOB: BR RTP-C2
RERUN

LUST

SEARCH ID: 1 **DIST/DIR:** 0.30 NW **ELEVATION:** 3034 **MAP ID:** 1

NAME: FUSON FARMS INC / USDA
ADDRESS: 28041 AVE C-6 W
LANCASTER CA 93534
LOS ANGELES

REV: 06/22/10
ID1: T0603700238
ID2:
STATUS: COMPLETED - CASE CLOSED
PHONE:

CONTACT:
SOURCE: CA SWRCB

RELEASE DATA FROM THE CALIFORNIA STATE WATER RESOURCES CONTROL BOARD LUSTIS DATABASE

Please note that some data previously provided by the State Water Resources Control Board in the LUSTIS database is not currently being provided by the agency in the most recent edition. Incidents that occurred after the year 2000 may not have much information. Field headers with blank information following after should be interpreted as unreported by the agency.

LEAD AGENCY: LAHONTAN RWQCB (REGION 6V)
REGIONAL BOARD CASE NUMBER: 6B1900111T
LOCAL AGENCY: LOS ANGELES COUNTY
LOCAL CASE NUMBER:
RESPONSIBLE PARTY:
ADDRESS OF RESPONSIBLE PARTY:
SITE OPERATOR:
WATER SYSTEM:

CASE TYPE: LUST Cleanup Site
POTENTIAL CONTAMINANTS OF CONCERN: Diesel
POTENTIAL MEDIA AFFECTED: Soil
LEAK CAUSE:
LEAK SOURCE:
HOW LEAK WAS DISCOVERED:
DATE DISCOVERED (blank if not reported):
HOW LEAK WAS STOPPED:
STOP DATE (blank if not reported):
STATUS: Completed - Case Closed
STATUS DATE: 1991-10-07
ABATEMENT METHOD (please note that not all code translations have been provided by the reporting agency):
ENFORCEMENT TYPE (please note that not all code translations have been provided by the reporting agency):
DATE OF ENFORCEMENT (blank if not reported):
SITE HISTORY (blank if not reported):

ACTION TYPE (blank if not reported): Other
DATE (blank if not reported): 1950-01-01
ACTION (blank if not reported): Leak Reported

ACTION TYPE (blank if not reported): Other
DATE (blank if not reported): 1950-01-01
ACTION (blank if not reported): Leak Discovery

ACTION TYPE (blank if not reported): Other
DATE (blank if not reported): 1950-01-01
ACTION (blank if not reported): Leak Stopped

MTBE DATA FROM THE CALIFORNIA STATE WATER RESOURCES CONTROL BOARD LUSTIS DATABASE

MTBE DATE (Date of historical maximum MTBE concentration):
MTBE GROUNDWATER CONCENTRATION (parts per billion):
MTBE SOIL CONCENTRATION (parts per million):
MTBE CNTS:
MTBE FUEL:
MTBE TESTED:
MTBE CLASS:

Environmental FirstSearch Site Detail Report

Target Property: SEGMENT C2
ROSAMOND CA 93560

JOB: BR RTP-C2
RERUN

TRIBALLAND

SEARCH ID: 3 **DIST/DIR:** NON GC **ELEVATION:** **MAP ID:**

NAME: BUREAU OF INDIAN AFFAIRS CONTACT INFORMATION **REV:** 01/15/08
ADDRESS: UNKNOWN **ID1:** BIA-93532
CA 93532 **ID2:**
LOS ANGELES **STATUS:**
CONTACT: **PHONE:**
SOURCE: BIA

BUREAU OF INDIAN AFFAIRS CONTACT INFORMATION

OFFICE: Pacific Regional Office
CONTACT: CLAY GREGORY, REGIONAL DIRECTOR

ADDRESS: 2800 Cottage Way
Sacramento CA 95825
PHONE: Phone: 916-978-6000
FAX: Fax: 916-978-6099

The Native American Consultation Database (NACD) is a tool for identifying consultation contacts for Indian tribes, Alaska Native villages and corporations, and Native Hawaiian organizations. The database is not a comprehensive source of information, but it does provide a starting point for the consultation process by identifying tribal leaders and NAGPRA contacts. This database can be accessed online at the following web address
<http://home.nps.gov/nacd/>

TRIBALLAND

SEARCH ID: 2 **DIST/DIR:** NON GC **ELEVATION:** **MAP ID:**

NAME: BUREAU OF INDIAN AFFAIRS CONTACT INFORMATION **REV:** 01/15/08
ADDRESS: UNKNOWN **ID1:** BIA-93560
CA 93560 **ID2:**
KERN **STATUS:**
CONTACT: **PHONE:**
SOURCE: BIA

BUREAU OF INDIAN AFFAIRS CONTACT INFORMATION

OFFICE: Pacific Regional Office
CONTACT: CLAY GREGORY, REGIONAL DIRECTOR

ADDRESS: 2800 Cottage Way
Sacramento CA 95825
PHONE: Phone: 916-978-6000
FAX: Fax: 916-978-6099

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<http://home.nps.gov/nacd/>

Environmental FirstSearch Descriptions

NPL: EPA NATIONAL PRIORITY LIST - The National Priorities List is a list of the worst hazardous waste sites that have been identified by Superfund. Sites are only put on the list after they have been scored using the Hazard Ranking System (HRS), and have been subjected to public comment. Any site on the NPL is eligible for cleanup using Superfund Trust money.

A Superfund site is any land in the United States that has been contaminated by hazardous waste and identified by the Environmental Protection Agency (EPA) as a candidate for cleanup because it poses a risk to human health and/or the environment.

FINAL - Currently on the Final NPL

PROPOSED - Proposed for NPL

NPL DELISTED: EPA NATIONAL PRIORITY LIST Subset - Database of delisted NPL sites. The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

DELISTED - Deleted from the Final NPL

CERCLIS: EPA COMPREHENSIVE ENVIRONMENTAL RESPONSE COMPENSATION AND LIABILITY INFORMATION SYSTEM (CERCLIS)- CERCLIS is a database of potential and confirmed hazardous waste sites at which the EPA Superfund program has some involvement. It contains sites that are either proposed to be or are on the National Priorities List (NPL) as well as sites that are in the screening and assessment phase for possible inclusion on the NPL.

PART OF NPL- Site is part of NPL site

DELETED - Deleted from the Final NPL

FINAL - Currently on the Final NPL

NOT PROPOSED - Not on the NPL

NOT VALID - Not Valid Site or Incident

PROPOSED - Proposed for NPL

REMOVED - Removed from Proposed NPL

SCAN PLAN - Pre-proposal Site

WITHDRAWN - Withdrawn

NFRAP: EPA COMPREHENSIVE ENVIRONMENTAL RESPONSE COMPENSATION AND LIABILITY INFORMATION SYSTEM ARCHIVED SITES - database of Archive designated CERCLA sites that, to the best of EPA's knowledge, assessment has been completed and has determined no further steps will be taken to list this site on the National Priorities List (NPL). This decision does not necessarily mean that there is no hazard associated with a given site; it only means that, based upon available information, the location is not judged to be a potential NPL site.

NFRAP - No Further Remedial Action Plan

P - Site is part of NPL site

D - Deleted from the Final NPL

F - Currently on the Final NPL

N - Not on the NPL

O - Not Valid Site or Incident

P - Proposed for NPL

R - Removed from Proposed NPL

S - Pre-proposal Site

W - Withdrawn

RCRA COR ACT: EPA RESOURCE CONSERVATION AND RECOVERY INFORMATION SYSTEM SITES - Database of hazardous waste information contained in the Resource Conservation and Recovery Act Information (RCRAInfo), a national program management and inventory system about hazardous waste handlers. In general, all generators, transporters, treaters, storers, and disposers of hazardous waste are required to provide information about their activities to state environmental agencies. These agencies, in turn pass on the information to regional and national EPA offices. This regulation is governed by the Resource Conservation and Recovery Act (RCRA), as amended by the Hazardous and Solid Waste Amendments of 1984. RCRAInfo facilities that have reported violations and subject to corrective actions.

RCRA TSD: EPA RESOURCE CONSERVATION AND RECOVERY INFORMATION SYSTEM TREATMENT, STORAGE, and DISPOSAL FACILITIES. - Database of hazardous waste information contained in the Resource Conservation and Recovery Act Information (RCRAInfo), a national program management and inventory system about hazardous waste handlers. In general, all generators, transporters, treaters, storers, and disposers of hazardous waste are required to provide information about their activities to state environmental agencies. These agencies, in turn pass on the information to regional and national EPA offices. This regulation is governed by the Resource Conservation and Recovery Act (RCRA), as amended by the Hazardous and Solid Waste Amendments of 1984.

Facilities that treat, store, dispose, or incinerate hazardous waste.

RCRA GEN: EPAMA DEP/CT DEP RESOURCE CONSERVATION AND RECOVERY INFORMATION SYSTEM GENERATORS - Database of hazardous waste information contained in the Resource Conservation and Recovery Act Information (RCRAInfo), a national program management and inventory system about hazardous waste handlers. In general, all generators, transporters, treaters, storers, and disposers of hazardous waste are required to provide information about their activities to state environmental agencies. These agencies, in turn pass on the information to regional and national EPA offices. This regulation is governed by the Resource Conservation and Recovery Act (RCRA), as amended by the Hazardous and Solid Waste Amendments of 1984.

Facilities that generate or transport hazardous waste or meet other RCRA requirements.

LGN - Large Quantity Generators

SGN - Small Quantity Generators

VGN - Conditionally Exempt Generator.

Included are RAATS (RCRA Administrative Action Tracking System) and CMEL (Compliance Monitoring & Enforcement List) facilities.

CONNECTICUT HAZARDOUS WASTE MANIFEST - Database of all shipments of hazardous waste within, into or from Connecticut. The data includes date of shipment, transporter and TSD info, and material shipped and quantity. This data is appended to the details of existing generator records.

MASSACHUSETTES HAZARDOUS WASTE GENERATOR - database of generators that are regulated under the MA DEP.

VQN-MA = generates less than 220 pounds or 27 gallons per month of hazardous waste or waste oil.

SQN-MA = generates 220 to 2,200 pounds or 27 to 270 gallons per month of waste oil.

LQG-MA = generates greater than 2,200 lbs of hazardous waste or waste oil per month.

RCRA NLR: EPA RESOURCE CONSERVATION AND RECOVERY INFORMATION SYSTEM SITES - Database of hazardous waste information contained in the Resource Conservation and Recovery Act Information (RCRAInfo), a national program management and inventory system about hazardous waste handlers. In general, all generators, transporters, treaters, storers, and disposers of hazardous waste are required to provide information about their activities to state environmental agencies. These agencies, in turn pass on the information to regional and national EPA offices. This regulation is governed by the Resource Conservation and Recovery Act (RCRA), as amended by the Hazardous and Solid Waste Amendments of 1984.

Facilities not currently classified by the EPA but are still included in the RCRAInfo database. Reasons for non classification:

Failure to report in a timely matter.

No longer in business.

No longer in business at the listed address.

No longer generating hazardous waste materials in quantities which require reporting.

ERNS: EPA/NRC EMERGENCY RESPONSE NOTIFICATION SYSTEM (ERNS) - Database of incidents reported to the National Response Center. These incidents include chemical spills, accidents involving chemicals (such as fires or explosions), oil spills, transportation accidents that involve oil or chemicals, releases of radioactive materials, sightings of oil sheens on bodies of water, terrorist incidents involving chemicals, incidents where illegally dumped chemicals have been found, and drills intended to prepare responders to handle these kinds of incidents. Data since January 2001 has been received from the National Response System database as the EPA no longer maintains this data.

Tribal Lands: DOI/BIA INDIAN LANDS OF THE UNITED STATES - Database of areas with boundaries established by treaty, statute, and (or) executive or court order, recognized by the Federal Government as territory in which American Indian tribes have primary governmental authority. The Indian Lands of the United States map layer shows areas of 640 acres or more, administered by the Bureau of Indian Affairs. Included are

Federally-administered lands within a reservation which may or may not be considered part of the reservation.
BUREAU OF INDIAN AFFAIRS CONTACT - Regional contact information for the Bureau of Indian Affairs offices.

State/Tribal Sites: CA EPA SMBRPD / CAL SITES- The California Department of Toxic Substances Control (DTSC) has developed an electronic database system called Envirostor with information about sites that are known to be contaminated with hazardous substances as well as information on uncharacterized properties where further studies may reveal problems. The Site Mitigation and Brownfields Reuse Program Database (SMBRPD), formerly known as CalSites, is used primarily by DTSC's staff as an informational tool to evaluate and track activities at properties that may have been affected by the release of hazardous substances. The SMBRPD displays information in six categories, two of which are found in ST. The categories listed under ST are:

1. State Response Sites.
2. School Property Evaluation Program Properties (SCH)

Please Note: Our reports list the above sites as DB Type (STATE). Other categories found in the SMBRPD are listed in our reports in the DB Types OT and VC.

Each Category contains information on properties based upon the type of work taking place at the site. State Response Sites contains only known and potential hazardous substance release sites considered as posing the greatest threat to the public. School sites included in ST will be found within the SMBRPD's School Property Evaluation Program.

CORTESE LIST-Pursuant to Government Code Section 65962.5, the Hazardous Waste and Substances Sites List has been compiled by Cal/EPA, Hazardous Materials Data Management Program to provide information about the location of hazardous materials release sites. Cortese List sites that fall under DTSC's guidelines for State Response sites are included in our reports in the ST category as are qualifying sites from the Annual Work Plan (formerly Bond Expenditure Plan) and the historic ASPIS databases.

State Spills 90: CA EPA SLIC REGIONS 1 - 9- The California Regional Water Quality Control Boards maintain report of sites that have records of spills, leaks, investigation, and cleanups.

State/Tribal SWL: CA IWMB/SWRCB/COUNTY SWIS SOLID WASTE INFORMATION SYSTEM-The California Integrated Waste Management Board maintains a database on solid waste facilities, operations, and disposal sites throughout the state of California. The types of facilities found in this database include landfills, transfer stations, material recovery facilities, composting sites, transformation facilities, waste tire sites, and closed disposal sites. For more information on individual sites call the number listed in the source field..

Please Note: This database contains poor site location information for many sites in our reports; therefore, it may not be possible to locate or plot some sites in our reports.

WMUDS-The State Water Resources Control Board maintained the Waste Management Unit Database System (WMUDS). It is no longer updated. It tracked management units for several regulatory programs related to waste management and its potential impact on groundwater. Two of these programs (SWAT & TPCA) are no longer on-going regulatory programs as described below. Chapter 15 (SC15) is still an on-going regulatory program and information is updated periodically but not to the WMUDS database. The WMUDS System contains information from the following agency databases: Facility, Waste Management Unit (WMU), Waste Discharger System (WDS), SWAT, Chapter 15, TPCA, RCRA, Inspections, Violations, and Enforcement's.

Note: This database contains poor site location information for many sites in our reports; therefore, it may not be possible to locate or plot some sites in reports.

ORANGE COUNTY LANDFILLS LIST- A list maintained by the Orange County Health Department.

State/Tribal LUST: CA SWRCB/COUNTY LUSTIS- The State Water Resources Control Board maintains a database of sites with confirmed or unconfirmed leaking underground storage tanks. Information for this database is collected from the states regional boards quarterly and integrated with this database.

SAN DIEGO COUNTY LEAKING TANKS- The San Diego County Department of Environmental Health maintains a database of sites with confirmed or unconfirmed leaking underground storage tanks within its HE17/58 database. For more information on a specific file call the HazMat Duty Specialist at phone number listed in the source information field.

State/Tribal UST/AST: CA EPA/COUNTY/CITY ABOVEGROUND STORAGE TANKS LISTING-The Above Ground Petroleum Storage Act became State Law effective January 1, 1990. In general, the law requires owners or operators of AST's with petroleum products to file a storage statement and pay a fee by July 1, 1990 and every two years thereafter, take specific action to prevent spills, and in certain instances implement a groundwater monitoring program. This law does not apply to that portion of a tank facility associated with the

production oil and regulated by the State Division of Oil and Gas of the Dept. of Conservation.

SWEEPS / FIDS STATE REGISTERED UNDERGROUND STORAGE TANKS- Until 1994 the State Water Resources Control Board maintained a database of registered underground storage tanks statewide referred to as the SWEEPS System. The SWEEPS UST information was integrated with the CAL EPA's Facility Index System database (FIDS) which is a master index of information from numerous California agency environmental databases. That was last updated in 1994. We have included the UST information from the FIDS database in our reports for historical purposes to help our clients identify where tanks may possibly have existed. For more information on specific sites from individual paper files archived at the State Water Resources Control Board call the number listed with the source information.

INDIAN LANDS UNDERGROUND STORAGE TANKS LIST- A listing of underground storage tanks currently on Indian Lands under federal jurisdiction. California Indian Land USTs are administered by US EPA Region 9.

CUPA DATABASES & SOURCES- Definition of a CUPA: A Certified Unified Program Agency (CUPA) is a local agency that has been certified by the CAL EPA to implement six state environmental programs within the local agency's jurisdiction. These can be a county, city, or JPA (Joint Powers Authority). This program was established under the amendments to the California Health and Safety Code made by SB 1082 in 1994.

A Participating Agency (PA) is a local agency that has been designated by the local CUPA to administer one or more Unified Programs within their jurisdiction on behalf of the CUPA. A Designated Agency (DA) is an agency that has not been certified by the CUPA but is the responsible local agency that would implement the six unified programs until they are certified.

Please Note: We collect and maintains information regarding Underground Storage Tanks from the majority of the CUPAS and Participating Agencies in the State of California. These agencies typically do not maintain nor release such information on a uniform or consistent schedule; therefore, currency of the data may vary. Please look at the details on a specific site with a UST record in the First Search Report to determine the actual currency date of the record as provided by the relevant agency. Numerous efforts are made on a regular basis to obtain updated records.

State/Tribal IC: CA EPA DEED-RESTRICTED SITES LISTING- The California EPA's Department of Toxic Substances Control Board maintains a list of deed-restricted sites, properties where the DTSC has placed limits or requirements on the future use of the property due to varying levels of cleanup possible, practical or necessary at the site.

State/Tribal VCP: CA EPA SMBRPD / CAL SITES- The California Department of Toxic Substances Control (DTSC) has developed an electronic database system called Envirostor with information about sites that are known to be contaminated with hazardous substances as well as information on uncharacterized properties where further studies may reveal problems. The Site Mitigation and Brownfields Reuse Program Database (SMBRPD), formerly known as CalSites, is used primarily by DTSC's staff as an informational tool to evaluate and track activities at properties that may have been affected by the release of hazardous substances. The Voluntary Cleanup Program (VCP) category contains only those properties undergoing voluntary investigation and/or cleanup and which are listed in the Voluntary Cleanup Program.

Please Note: Our reports list the above sites as DB Type VC.

RADON: NTIS NATIONAL RADON DATABASE - EPA radon data from 1990-1991 national radon project collected for a variety of zip codes across the United States.

State Permits: CA EPA/COUNTY SAN DIEGO COUNTY HE17 PERMITS- The HE17/58 database tracks establishments issued permits and the status of their permits in relation to compliance with federal, state, and local regulations that the County oversees. It tracks if a site is a hazardous waste generator, TSD, gas station, has underground tanks, violations, or unauthorized releases. For more information on a specific file call the HazMat Duty Specialist at the phone number listed in the source information field.

SAN BERNARDINO COUNTY HAZARDOUS MATERIALS PERMITS- Handlers and Generators Permit Information Maintained by the Hazardous Materials Division.

State Other: CA EPA/COUNTY SMBRPD / CAL SITES- The California Department of Toxic Substances Control (DTSC) has developed an electronic database system called Envirostor with information about sites that are known to be contaminated with hazardous substances as well as information on uncharacterized properties where further studies may reveal problems. The Site Mitigation and Brownfields Reuse Program Database (SMBRPD), formerly known as CalSites, is used primarily by DTSC's staff as an informational tool to evaluate and track activities at properties that may have been affected by the release of hazardous substances.

The SMBRPD displays information in six categories, two of which are found in ST. The categories listed under

OT are:

1. Unconfirmed Properties Referred to Another Local or State Agency (REF)
2. Properties where a No Further Action Determination has been made (NFA)

Please Note: Our reports list the above sites as DB Type (OTHER). Other categories found in the SMBRPD are listed in our reports in the DB Types ST and VC.

LA COUNTY SITE MITIGATION COMPLAINT CONTROL LOG- The County of Los Angeles Public Health Investigation Compliant Control Log.

ORANGE COUNTY INDUSTRIAL SITE CLEANUPS- List maintained by the Orange County Environmental Health Agency.

RIVERSIDE COUNTY WASTE GENERATORS-A list of facilities in Riverside County which generate hazardous waste.

SACRAMENTO COUNTY MASTER HAZMAT LIST-Master list of facilities within Sacramento County with potentially hazardous materials.

SACRAMENTO COUNTY TOXIC SITE CLEANUPS-A list of sites where unauthorized releases of potentially hazardous materials have occurred.

HW Manifest: *CA EPA* DEPARTMENT OF TOXIC SUBSTANCES CONTROL HAZARDOUS WASTE MANIFEST INVENTORY-Records maintained by the CA DTSC of Hazardous Waste Manifests used to track and document the transport of hazardous waste from a generator's site to the site of its final disposition.

Environmental FirstSearch Database Sources

NPL: EPA Environmental Protection Agency

Updated quarterly

NPL DELISTED: EPA Environmental Protection Agency

Updated quarterly

CERCLIS: EPA Environmental Protection Agency

Updated quarterly

NFRAP: EPA Environmental Protection Agency.

Updated quarterly

RCRA COR ACT: EPA Environmental Protection Agency.

Updated quarterly

RCRA TSD: EPA Environmental Protection Agency.

Updated quarterly

RCRA GEN: EPA/MA DEP/CT DEP Environmental Protection Agency, Massachusetts Department of Environmental Protection, Connecticut Department of Environmental Protection

Updated quarterly

RCRA NLR: EPA Environmental Protection Agency

Updated quarterly

ERNS: EPA/NRC Environmental Protection Agency

Updated annually

Tribal Lands: DOI/BIA United States Department of the Interior

Updated annually

State/Tribal Sites: CA EPA The CAL EPA, Depart. Of Toxic Substances Control
Phone: (916) 323-3400

Updated quarterly/when available

State Spills 90: CA EPA The California State Water Resources Control Board

Updated when available

State/Tribal SWL: CA IWMB/SWRCB/COUNTY The California Integrated Waste Management Board
Phone:(916) 255-2331
The State Water Resources Control Board
Phone:(916) 227-4365
Orange County Health Department

Updated quarterly/when available

State/Tribal LUST: CA SWRCB/COUNTY The California State Water Resources Control Board
Phone:(916) 227-4416
San Diego County Department of Environmental Health

Updated quarterly/when available

State/Tribal UST/AST: CA EPA/COUNTY/CITY The State Water Resources Control Board
Phone:(916) 227-4364
CAL EPA Department of Toxic Substances Control
Phone:(916)227-4404
US EPA Region 9 Underground Storage Tank Program
Phone: (415) 972-3372
ALAMEDA COUNTY CUPAS:
* County of Alameda Department of Environmental Health
* Cities of Berkeley, Fremont, Hayward, Livermore / Pleasanton, Newark, Oakland, San Leandro, Union
ALPINE COUNTY CUPA:
* Health Department (Only updated by agency sporadically)
AMADOR COUNTY CUPA:
* County of Amador Environmental Health Department
BUTTE COUNTY CUPA
* County of Butte Environmental Health Division (Only updated by agency biannually)
CALAVERAS COUNTY CUPA:
* County of Calaveras Environmental Health Department
COLUSA COUNTY CUPA:
* Environmental Health Dept.
CONTRA COSTA COUNTY CUPA:
* Hazardous Materials Program
DEL NORTE COUNTY CUPA:
* Department of Health and Social Services
EL DORADO COUNTY CUPAS:
* County of El Dorado Environmental Health - Solid Waste Div (Only updated by agency annually)
* County of El Dorado EMD Tahoe Division (Only updated by agency annually)
FRESNO COUNTY CUPA:
* Haz. Mat and Solid Waste Programs
GLENN COUNTY CUPA:
* Air Pollution Control District
HUMBOLDT COUNTY CUPA:
* Environmental Health Division
IMPERIAL COUNTY CUPA:
* Department of Planning and Building
INYO COUNTY CUPA:
* Environmental Health Department

KERN COUNTY CUPA:

- * County of Kern Environmental Health Department
- * City of Bakersfield Fire Department

KINGS COUNTY CUPA:

- * Environmental Health Services

LAKE COUNTY CUPA:

- * Division of Environmental Health

LASSEN COUNTY CUPA:

- * Department of Agriculture

LOS ANGELES COUNTY CUPAS:

- * County of Los Angeles Fire Department CUPA Data as maintained by the Los Angeles County Department of Public Works

- * County of Los Angeles Environmental Programs Division

- * Cities of Burbank, El Segundo, Glendale, Long Beach/Signal Hill, Los Angeles, Pasadena, Santa Fe Springs, Santa Monica, Torrance, Vernon

MADERA COUNTY CUPA:

- * Environmental Health Department

MARIN COUNTY CUPA:

- * County of Marin Office of Waste Management

- * City of San Rafael Fire Department

MARIPOSA COUNTY CUPA:

- * Health Department

MENDOCINO COUNTY CUPA:

- * Environmental Health Department

MERCED COUNTY CUPA:

- * Division of Environmental Health

MODOC COUNTY CUPA:

- * Department of Agriculture

MONO COUNTY CUPA:

- * Health Department

MONTEREY COUNTY CUPA:

- * Environmental Health Division

NAPA COUNTY CUPA:

- * Hazardous Materials Section

NEVADA COUNTY CUPA:

- * Environmental Health Department

ORANGE COUNTY CUPAS:

- * County of Orange Environmental Health Department

- * Cities of Anaheim, Fullerton, Orange, Santa Ana

- * County of Orange Environmental Health Department

PLACER COUNTY CUPAS:

- * County of Placer Division of Environmental Health Field Office

- * Tahoe City

- * City of Roseville Roseville Fire Department

PLUMAS COUNTY CUPA:

- * Environmental Health Department

RIVERSIDE COUNTY CUPA:

- * Environmental Health Department

SACRAMENTO COUNTY CUPA:

- * County Environmental Mgmt Dept, Haz. Mat. Div.

SAN BENITO COUNTY CUPA:

- * City of Hollister Environmental Service Department

SAN BERNARDINO COUNTY CUPAS:

- * County of San Bernardino Fire Department, Haz. Mat. Div.

- * City of Hesperia Hesperia Fire Prevention Department

- * City of Victorville Victorville Fire Department

SAN DIEGO COUNTY CUPA:

- * The San Diego County Dept. of Environmental Health HE 17/58

SAN FRANCISCO COUNTY CUPA:

- * Department of Public Health

SAN JOAQUIN COUNTY CUPA:

- * Environmental Health Division

SAN LUIS OBISPO COUNTY CUPAS:

- * County of San Luis Obispo Environmental Health Division
- * City of San Luis Obispo City Fire Department

SAN MATEO COUNTY CUPA:

- * Environmental Health Department

SANTA BARBARA COUNTY CUPA:

- * County Fire Dept Protective Services Division

SANTA CLARA COUNTY CUPAS:

- * County of Santa Clara Hazardous Materials Compliance Division
- * Santa Clara County Central Fire Protection District (Covers Campbell, Cupertino, Los Gatos, & Morgan Hill)
- * Cities of Gilroy, Milpitas, Mountain View, Palo Alto, San Jose Fire, Santa Clara, Sunnyvale

SANTA CRUZ COUNTY CUPA:

- * Environmental Health Department

SHASTA COUNTY CUPA:

- * Environmental Health Department

SIERRA COUNTY CUPA:

- * Health Department

SISKIYOU COUNTY CUPA:

- * Environmental Health Department

SONOMA COUNTY CUPAS:

- * County of Sonoma Department Of Environmental Health
- * Cities of Healdsburg / Sebastopol, Petaluma, Santa Rosa

STANISLAUS COUNTY CUPA:

- * Department of Environmental Resources Haz. Mat. Division

SUTTER COUNTY CUPA:

- * Department of Agriculture

TEHAMA COUNTY CUPA:

- * Department of Environmental Health

TRINITY COUNTY CUPA:

- * Department of Health

TULARE COUNTY CUPA:

- * Environmental Health Department

TUOLUMNE COUNTY CUPA:

- * Environmental Health

VENTURA COUNTY CUPAS:

- * County of Ventura Environmental Health Division
- * Cities of Oxnard, Ventura

YOLO COUNTY CUPA:

- * Environmental Health Department

YUBA COUNTY CUPA:

Updated quarterly/annually/when available

State/Tribal IC: CA EPA The California EPA Department of Toxic Substances Control.

Updated Updated quarterly/annually/when available

State/Tribal VCP: CA EPA The California EPA Department of Toxic Substances Control.

Updated Updated quarterly/annually/when available

RADON: NTIS Environmental Protection Agency, National Technical Information Services

Updated periodically

State Permits: CA EPA/COUNTY The San Diego County Depart. Of Environmental Health
Phone:(619) 338-2211
San Bernardino County Fire Department

Updated quarterly/when available

State Other: CA EPA/COUNTY The CAL EPA, Depart. Of Toxic Substances Control
Phone: (916) 323-3400
The Los Angeles County Hazardous Materials Division
Phone: (323) 890-7806
Orange County Environmental Health Agency
Phone: (714) 834-3536
Riverside County Department of Environmental Health, Hazardous Materials Management Division
Phone:(951) 358-5055
Sacramento County Environmental Management Department

Updated quarterly/when available

HW Manifest: CA EPA
CAL EPA, Department of Toxic Substances Control

Updated annually/when available

TRACK ► INFO SERVICES, LLC

Environmental FirstSearch™ Report

Target Property:

SEGMENT D

LEBEC CA 93243

Job Number: BRRTP-D

PREPARED FOR:

Power Engineers, Inc.
731 E Ball Road Suite 100
Anaheim, CA 92805
(949) 280-7922

09-20-10

Environmental
FIRSTSEARCH



Tel: (866) 664-9981

Fax: (818) 249-4227

***Environmental FirstSearch
Site Information Report***

Request Date: 09-20-10
Requestor Name: Roya Compani
Standard: ASTM-05

Search Type: LINEAR
25.09 mile(s)
Job Number: BR RTP-D
Filtered Report

Target Site: SEGMENT D
LEBEC CA 93243

Demographics

Sites: 8	Non-Geocoded: 5	Population: NA
Radon: 0.6 PCI/L		

Site Location

	<u>Degrees (Decimal)</u>	<u>Degrees (Min/Sec)</u>		<u>UTMs</u>
Longitude:	-118.638695	-118:38:19	Easting:	349762.439
Latitude:	34.617132	34:37:2	Northing:	3831610.109
Elevation:	N/A		Zone:	11

Comment

Comment:

Additional Requests/Services

Adjacent ZIP Codes: 1 Mile(s)

Services:

ZIP Code	City Name	ST	Dist/Dir	Sel
91384	CASTAIC	CA	0.00 --	Y
91390	SANTA CLARITA	CA	0.00 --	Y
93532	LAKE HUGHES	CA	0.00 --	Y

	Requested?	Date
Fire Insurance Maps	No	
Aerial Photographs	No	
Historical Topos	No	
City Directories	No	
Title Search/Env Liens	No	
Municipal Reports	No	
Online Topos	No	

Environmental FirstSearch Search Summary Report

Target Site: SEGMENT D
LEBEC CA 93243

FirstSearch Summary

Database	Sel	Updated	Radius	Site	1/8	1/4	1/2	1/2>	ZIP	TOTALS
NPL	Y	08-01-10	1.00	0	0	0	0	0	0	0
NPL Delisted	Y	08-02-10	0.50	0	0	0	0	-	0	0
CERCLIS	Y	07-02-10	0.50	0	0	0	0	-	0	0
NFRAP	Y	07-02-10	0.50	0	0	0	0	-	0	0
RCRA COR ACT	Y	07-14-10	1.00	0	0	0	0	0	0	0
RCRA TSD	Y	07-14-10	0.50	0	0	0	0	-	0	0
RCRA GEN	Y	07-14-10	0.25	0	0	0	-	-	0	0
RCRA NLR	Y	07-14-10	0.12	0	1	-	-	-	0	1
Federal Brownfield	Y	07-06-10	0.25	0	0	0	-	-	0	0
ERNS	Y	07-23-10	0.12	0	0	-	-	-	0	0
Tribal Lands	Y	12-01-05	1.00	0	0	0	0	0	2	2
State/Tribal Sites	Y	08-04-10	1.00	0	0	0	0	0	2	2
State Spills 90	Y	06-22-10	0.12	0	0	-	-	-	0	0
State/Tribal SWL	Y	06-21-10	0.50	0	0	0	0	-	0	0
State/Tribal LUST	Y	06-22-10	0.50	0	0	0	0	-	0	0
State/Tribal UST/AST	Y	03-10-10	0.25	0	1	1	-	-	0	2
State/Tribal EC	Y	NA	0.25	0	0	0	-	-	0	0
State/Tribal IC	Y	08-04-10	0.25	0	0	0	-	-	0	0
State/Tribal VCP	Y	08-04-10	0.50	0	0	0	0	-	0	0
State/Tribal Brownfields	Y	NA	0.50	0	0	0	0	-	0	0
State Permits	Y	06-22-10	0.12	0	0	-	-	-	0	0
State Other	Y	08-04-10	0.25	0	0	0	-	-	1	1
Federal IC/EC	Y	08-26-10	0.50	0	0	0	0	-	0	0
HW Manifest	Y	08-02-10	0.12	0	0	-	-	-	0	0
- TOTALS -				0	2	1	0	0	5	8

Notice of Disclaimer

Due to the limitations, constraints, inaccuracies and incompleteness of government information and computer mapping data currently available to TRACK Info Services, certain conventions have been utilized in preparing the locations of all federal, state and local agency sites residing in TRACK Info Services's databases. All EPA NPL and state landfill sites are depicted by a rectangle approximating their location and size. The boundaries of the rectangles represent the eastern and western most longitudes; the northern and southern most latitudes. As such, the mapped areas may exceed the actual areas and do not represent the actual boundaries of these properties. All other sites are depicted by a point representing their approximate address location and make no attempt to represent the actual areas of the associated property. Actual boundaries and locations of individual properties can be found in the files residing at the agency responsible for such information.

Waiver of Liability

Although TRACK Info Services uses its best efforts to research the actual location of each site, TRACK Info Services does not and can not warrant the accuracy of these sites with regard to exact location and size. All authorized users of TRACK Info Services's services proceeding are signifying an understanding of TRACK Info Services's searching and mapping conventions, and agree to waive any and all liability claims associated with search and map results showing incomplete and or inaccurate site locations.



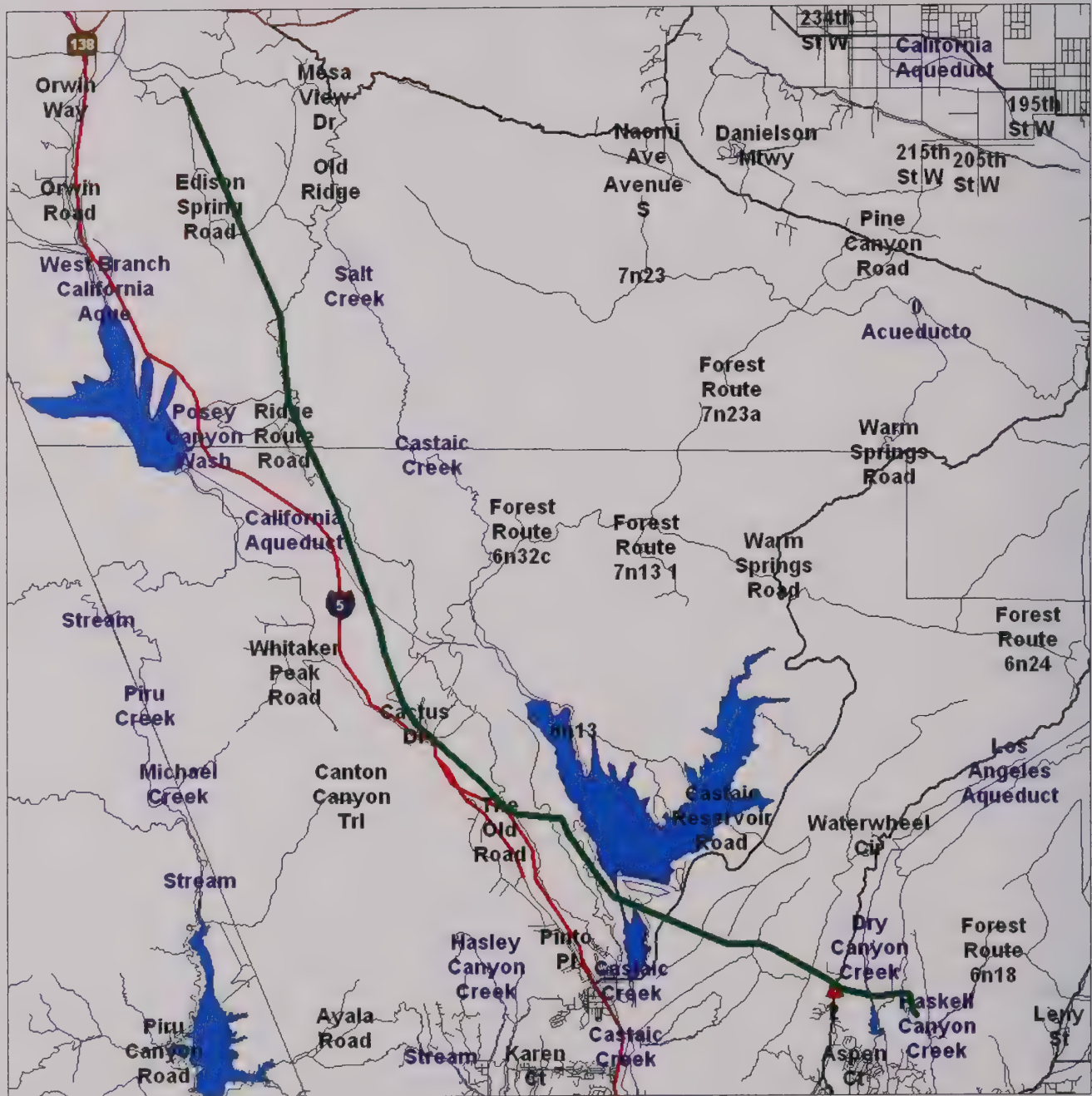
Environmental FirstSearch

1 Mile Radius from Line

Single Map:



SEGMENT D , LEBEC CA 93243

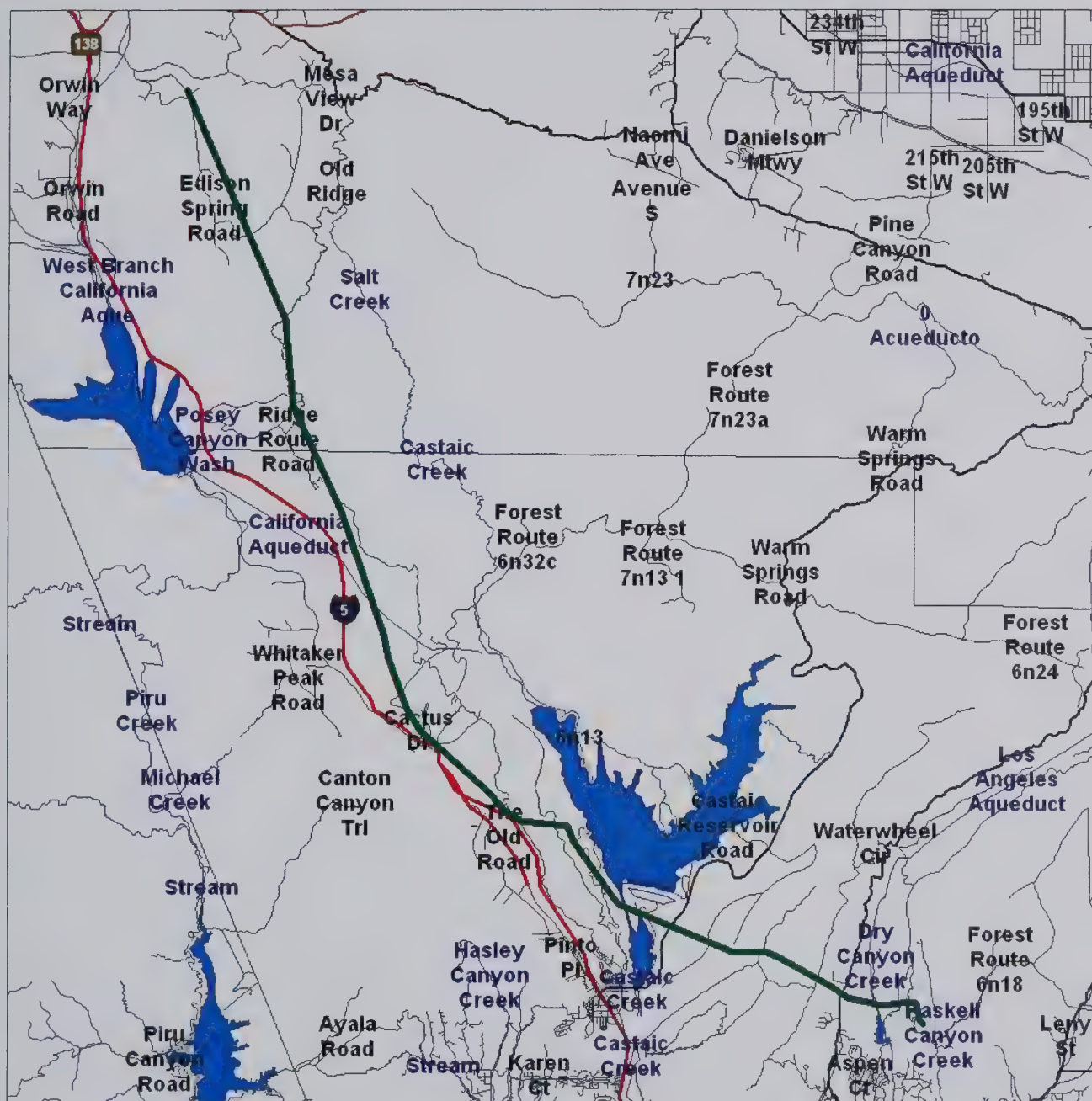


Source: U.S. Census TIGER Files

Linear Search Line
Identified Site, Multiple Sites, Receptor
NPL, DELNPL, Brownfield, Solid Waste Landfill (SWL), Hazardous Waste
Triballand.....
Railroads



SEGMENT D , LEBEC CA 93243



Source: U.S. Census TIGER Files

Linear Search Line.....
 Identified Site, Multiple Sites, Receptor.....
 NPL, DELNPL, Brownfield, Solid Waste Landfill (SWL), Hazardous Waste
 Triballand.....
 Railroads.....





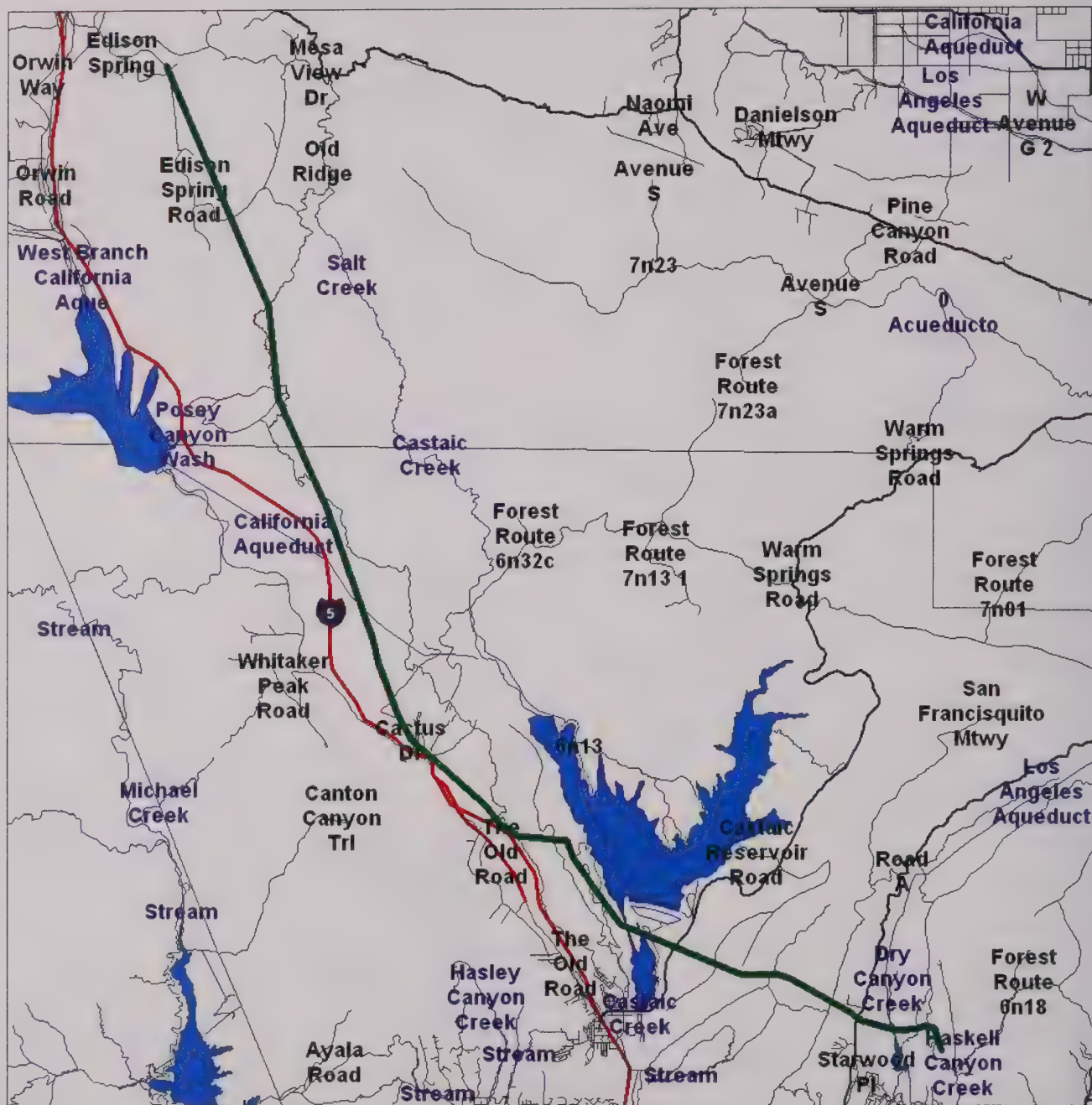
Environmental FirstSearch

.5 Mile Radius from Line
ASTM-05: Multiple Databases

Environmental
FIRSTSEARCH

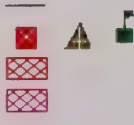


SEGMENT D , LEBEC CA 93243



Source: U.S. Census TIGER Files

Linear Search Line
Identified Site, Multiple Sites, Receptor
NPL, DELNPL, Brownfield, Solid Waste Landfill (SWL), Hazardous Waste
Triballand
Railroads



***Environmental FirstSearch
Sites Summary Report***

Target Property: SEGMENT D
 LEBEC CA 93243

JOB: BRRTP-D

TOTAL: 8 **GEOCODED:** 3 **NON GEOCODED:** 5 **SELECTED:** 8

DB Type	Site Name/ID/Status	Address	Dist/Dir	ElevDiff	Map ID	Page No.
UST	L A CITY DWP - POWER PLANT 2 LACO012686/NOT REPORTED	32400 N SAN FRANCISQUITO CY SAUGUS CA 91350	0.08 SW	N/A	1	2
RCRANLR	POWER PLANT 2 CAD983613407/NLR	32400 SAN FRANCISQUITO RD SAUGUS CA 91350	0.08 SW	N/A	1	3
UST	SAN FRANCISQUITO POWER PLANT 2 AST2231/AST SWRCB REG.4	32300 N SAN FRANCISQUITO CY SAUGUS CA 91350	0.13 SW	N/A	2	4

***Environmental FirstSearch
Sites Summary Report***

Target Property: SEGMENT D
LEBEC CA 93243

JOB: BR RTP-D

TOTAL: 8 **GEOCODED:** 3 **NON GEOCODED:** 5 **SELECTED:** 8

DB Type	Site Name/ID/Status	Address	Dist/Dir	ElevDiff	Map ID	Page No.
TRIBALLAND	BUREAU OF INDIAN AFFAIRS CONTA BIA-91384	UNKNOWN CA 91384	NON GC	N/A		5
TRIBALLAND	BUREAU OF INDIAN AFFAIRS CONTA BIA-93243	UNKNOWN CA 93243	NON GC	N/A		5
OTHER	CASTAIC HIGH SCHOOL CAL19650031/NO FURTHER ACTION	RIDGE ROUTE RD CASTAIC CA 91384	NON GC	N/A		7
STATE	SCHOOL ON 18 ACRE SITE CAL19000001/NO ACTION - FOR CALM	RIDGE ROUTE RD CASTAIC CA 91384	NON GC	N/A		8
STATE	CASTAIC HIGH SCHOOL CAL19650031/NO FURTHER ACTION	RIDGE ROUTE RD CASTAIC CA 91384	NON GC	N/A		10

Environmental FirstSearch Site Detail Report

Target Property: SEGMENT D
LEBEC CA 93243

JOB: BR RTP-D

UST

SEARCH ID: 2 **DIST/DIR:** 0.08 SW **ELEVATION:** 1317 **MAP ID:** 1

NAME:	L A CITY DWP - POWER PLANT 2	REV:	05/02/09
ADDRESS:	32400 N SAN FRANCISQUITO CYN RD SAUGUS CA 91350 LOS ANGELES	ID1:	LACO012686
CONTACT:	ENERGY CONTROL CENTER	ID2:	THOMAS GUIDE 4192C3
SOURCE:	LA COUNTY DPW	STATUS:	NOT REPORTED
		PHONE:	8187716631

According to the Los Angeles County Department of Public Works the following information is current as of 05/02/09

GENERAL INFORMATION REGARDING SITE

Tax Accessors Parcel /s:	3244 / 008 / 301
File Number:	012868
File Name:	L A CITY DWP - POWER PLANT 2
Property Owner Name and Type:	LA DWP / LOCAL AGENCY/DISTRICT
Property Owner Address:	ATTN HAZARDOUS SUBSTANCES 111 N HOPE ST ROOM 1121 LOS ANGELES, CA 90012
Tank Owner Name and Type:	LA DWP / LOCAL AGENCY/DISTRICT
Tank Owner Address:	ATTN HAZARDOUS SUBSTANCES 111 N HOPE ST ROOM 1121 LOS ANGELES, CA 90012
Tank Owner Phone:	213/3670415

PERMIT INFORMATION

Permit Number and Category:	00000487A / TANK
Permit Type and Date:	ADD ADDITIONAL TANK / 19860912
Permit Expiration Date:	19910912
Permit Status:	REM
Fee Exempt:	Yes
Penalty Date/s:	/
Suspension Date and Reason:	/

PERMIT INFORMATION

Permit Number and Category:	00001947B / TANK
Permit Type and Date:	CLOSURE-BY REMOVAL / 19860918
Permit Expiration Date:	19910918
Permit Status:	REM
Fee Exempt:	Yes
Penalty Date/s:	/
Suspension Date and Reason:	/

PERMIT INFORMATION

Permit Number and Category:	00004762T / TANK
Permit Type and Date:	UST OPERATING PERMIT / 19911029
Permit Expiration Date:	20060630
Permit Status:	REM
Fee Exempt:	No
Penalty Date/s:	/
Suspension Date and Reason:	/

SPECIFIC TANK INFORMATION FOR TANK NUMBER: 00001

Unique Tank Number:	000022065
Status:	Removed
Installation Date:	19860912
Owner Number:	1
Capacity:	0000002500
Content:	
J Fuel Type:	REGULAR UNLEADED GASOLINE
CAS Number:	
Product or Waste in Tank (?):	PRODUCT

- Continued on next page -

**Environmental FirstSearch
Site Detail Report**

Target Property: SEGMENT D
LEBEC CA 93243

JOB: BR RTP-D

UST

SEARCH ID: 2 **DIST/DIR:** 0.08 SW **ELEVATION:** 1317 **MAP ID:** 1

NAME: L A CITY DWP - POWER PLANT 2
ADDRESS: 32400 N SAN FRANCISQUITO CYN RD
SAUGUS CA 91350
LOS ANGELES
CONTACT: ENERGY CONTROL CENTER
SOURCE: LA COUNTY DPW

REV: 05/02/09
ID1: LAC0012686
ID2: THOMAS GUIDE 4192C3
STATUS: NOT REPORTED
PHONE: 8187716631

TANK CLOSING and REMOVAL INFORMATION (if applicable) FOR TANK : 00001

Application Closing Number: 000431424
Date Tank Closed: 20050204
Last Used Date: 20050204
Remaining Quantity: 0000000000
Inert Fill: NO
Removal Application Number: 000431424

TANK and PIPING MATERIALS (if applicable) FOR TANK : 00001

Manufacturer: OWENS CORNING
Construction Type Description:
Construction Material Description:
Construction Lining Description:
Piping Type Description:
Piping Construction Description:
Piping Material Description:
Piping Leak Detection Description:
Leak Detection System 1:
Leak Detection System 2:
Last Update: 20051122
Last Operator: E459251

***Environmental FirstSearch
Site Detail Report***

Target Property: SEGMENT D
 LEBEC CA 93243

JOB: BRRTP-D

RCRANLR

SEARCH ID: 1	DIST/DIR: 0.08 SW	ELEVATION: 1317	MAP ID: 1
---------------------	--------------------------	------------------------	------------------

NAME: POWER PLANT 2
ADDRESS: 32400 SAN FRANCISQUITO RD
 SAUGUS CA 91350
 LOS ANGELES
CONTACT:
SOURCE: EPA

REV: 7/14/10
ID1: CAD983613407
ID2:
STATUS: NLR
PHONE:

SITE INFORMATION

CONTACT INFORMATION: JODEAN GIESE
 BOX 51111
 LOS ANGELES CA 900510100

PHONE: 2133674211

UNIVERSE INFORMATION:

NAIC INFORMATION

ENFORCEMENT INFORMATION:

VIOLATION INFORMATION:

***Environmental FirstSearch
Site Detail Report***

Target Property: SEGMENT D
 LEBEC CA 93243

JOB: BRRTP-D

UST			
SEARCH ID: 3	DIST/DIR: 0.13 SW	ELEVATION: 1312	MAP ID: 2
NAME: SAN FRANCISQUITO POWER PLANT 2		REV: 05/30/01	
ADDRESS: 32300 N SAN FRANCISQUITO CYN		ID1: AST2231	
SAUGUS CA 91350		ID2:	
LOS ANGELES		STATUS: AST SWRCB REG.4	
CONTACT:		PHONE:	
SOURCE:			
Region:		4	
Company Name:		<i>L.A. DEPT. OF WATER and POWER</i>	
Company Name 2:		<i>ENVIRONMENTAL SRVS. and PLANNING</i>	

**Environmental FirstSearch
Site Detail Report**

Target Property: SEGMENT D
LEBEC CA 93243

JOB: BR RTP-D

TRIBALLAND

SEARCH ID: 8 **DIST/DIR:** NON GC **ELEVATION:** **MAP ID:**

NAME: BUREAU OF INDIAN AFFAIRS CONTACT INFORMATION	REV: 01/15/08
ADDRESS: UNKNOWN	ID1: BIA-91384
CA 91384	ID2:
LOS ANGELES	STATUS:
CONTACT:	PHONE:
SOURCE: BIA	

BUREAU OF INDIAN AFFAIRS CONTACT INFORMATION

OFFICE:	Pacific Regional Office
CONTACT:	CLAY GREGORY, REGIONAL DIRECTOR
ADDRESS:	2800 Cottage Way
	Sacramento CA 95825
PHONE:	Phone: 916-978-6000
FAX:	Fax: 916-978-6099

The Native American Consultation Database (NACD) is a tool for identifying consultation contacts for Indian tribes, Alaska Native villages and corporations, and Native Hawaiian organizations. The database is not a comprehensive source of information, but it does provide a starting point for the consultation process by identifying tribal leaders and NAGPRA contacts. This database can be accessed online at the following web address
<http://home.nps.gov/nacd/>

TRIBALLAND

SEARCH ID: 7 **DIST/DIR:** NON GC **ELEVATION:** **MAP ID:**

NAME: BUREAU OF INDIAN AFFAIRS CONTACT INFORMATION	REV: 01/15/08
ADDRESS: UNKNOWN	ID1: BIA-93243
CA 93243	ID2:
KERN	STATUS:
CONTACT:	PHONE:
SOURCE: BIA	

BUREAU OF INDIAN AFFAIRS CONTACT INFORMATION

OFFICE:	Pacific Regional Office
CONTACT:	CLAY GREGORY, REGIONAL DIRECTOR
ADDRESS:	2800 Cottage Way
	Sacramento CA 95825
PHONE:	Phone: 916-978-6000
FAX:	Fax: 916-978-6099

The Native American Consultation Database (NACD) is a tool for identifying consultation contacts for Indian tribes, Alaska Native villages and corporations, and Native Hawaiian organizations. The database is not a comprehensive source of information, but it does provide a starting point for the consultation process by identifying tribal leaders and NAGPRA contacts. This database can be accessed online at the following web address
<http://home.nps.gov/nacd/>

**Environmental FirstSearch
Site Detail Report**

Target Property: SEGMENT D
LEBEC CA 93243

JOB: BR RTP-D

OTHER

SEARCH ID: 6 **DIST/DIR:** NON GC **ELEVATION:** **MAP ID:**

NAME: CASTAIC HIGH SCHOOL ADDRESS: RIDGE ROUTE RD CASTAIC CA 91384 LOS ANGELES CONTACT: SOURCE: CA DTSC	REV: 08/04/10 ID1: CAL19650031 ID2: STATUS: NO FURTHER ACTION PHONE:
--	---

GENERAL SITE INFORMATION

Site Type:	<i>School Investigation</i>
Status:	<i>No Further Action</i>
Status Date:	<i>2005-11-23</i>
NPL Site:	<i>NO</i>
Funding:	<i>School District</i>
Regulatory Agencies Involved:	<i>SMBRP</i>
Lead Agency:	<i>SMBRP</i>
Project Manager:	<i>STEPHANIE LEWIS</i>
Supervisor:	<i>Javier Hinojosa</i>
Branch:	<i>Chatsworth</i>
Acres:	<i>140</i>
Assessor's Parcel Number:	<i>3244-011-902, 3244-012-058, 3244-014-021, 3244-014-022, 3244-015-018, 3244-015-904</i>
Past Uses:	<i>* UNKNOWN</i>
Potential Contaminants:	<i>30015 30330</i>
Confirmed Contaminants:	<i>30330 30015</i>
Potential Media Affected:	<i>SOIL</i>
Restricted Use:	<i>NO</i>
Site Management Required:	<i>NONE SPECIFIED</i>
Special Programs Associated with this Site:	

OTHER SITE NAMES (blank below = not reported by agency)

CASTAIC HIGH SCHOOL

WILLIAM S HART UHSD-PRPSD CASTAIC HS

WILLIAM S. HART UNION HIGH SCHOOL DIST.

3244-011-902

3244-012-058

3244-014-021

3244-014-022

3244-015-018

3244-015-904

304441

19650031

COMPLETED ACTIVITIES AND DTSC COMMENTS REGARDING THIS SITE (blank below = not reported by agency)

Area Name:	<i>PROJECT WIDE</i>
Sub-Area Name:	
Document Type:	<i>Cost Recovery Closeout Memo</i>
Completion Date:	<i>2005-11-23 00:00:00</i>
Comments:	

- Continued on next page -

Environmental FirstSearch
Site Detail Report

Target Property: SEGMENT D
LEBEC CA 93243

JOB: BR RTP-D

OTHER

SEARCH ID: 6 **DIST/DIR:** NON GC **ELEVATION:** **MAP ID:**

NAME: CASTAIC HIGH SCHOOL
ADDRESS: RIDGE ROUTE RD
CASTAIC CA 91384
LOS ANGELES

REV: 08/04/10
ID1: CAL19650031
ID2:
STATUS: NO FURTHER ACTION
PHONE:

CONTACT:
SOURCE: CA DTSC

Area Name: PROJECT WIDE
Sub- Area Name:
Document Type: Site Inspections/Visit (Non LUR)
Completion Date: 2004-11-30 00:00:00
Comments:

Area Name: PROJECT WIDE
Sub- Area Name:
Document Type: Environmental Oversight Agreement
Completion Date: 2004-02-19 00:00:00
Comments:

Area Name: PROJECT WIDE
Sub- Area Name:
Document Type: Preliminary Endangerment Assessment Report
Completion Date: 2005-11-14 00:00:00
Comments: PEA approved 11/03/05

Area Name: PROJECT WIDE
Sub- Area Name:
Document Type: Preliminary Endangerment Assessment Workplan
Completion Date: 2004-06-30 00:00:00
Comments:

**Environmental FirstSearch
Site Detail Report**

Target Property: SEGMENT D
LEBEC CA 93243

JOB: BR RTP-D

STATE

SEARCH ID: 5 **DIST/DIR:** NON GC **ELEVATION:** **MAP ID:**

NAME: SCHOOL ON 18 ACRE SITE ADDRESS: RIDGE ROUTE RD CASTAIC CA 91384 LOS ANGELES CONTACT: SOURCE: CA EPA	REV: 07/18/05 ID1: CAL19000001 ID2: STATUS: NO ACTION - FOR CALMORTGAGE PHONE:
--	---

OTHER SITE NAMES (blank below = not reported by agency)

CASTAIC UNION SD

SCHOOL ON 18 ACRE SITE

GENERAL SITE INFORMATION

File Name (if different than site name):	SCHOOL ON 18 ACRE SITE
Status:	NO ACTION - FOR CALMORTGAGE ONLY
AWP Site Type:	PROPOSED SCHOOL SITE PROPERTY
NPL Site:	
Fund:	F
Status Date:	01132000
Lead:	DEPT OF TOXIC SUBSTANCES CONTROL
Staff:	SKARINEN
DTSC Region and RWQCB :	GLENDALE
Branch:	SCHOOL EVALUATION
RWQCB:	
Site Access:	
Groundwater Contamination:	
Number of Sources Contributing to Contamination at the Site:	0

OTHER AGENCY ID NUMBERS (blank below = not reported by agency)

ID SOURCE NAME, and VALUE: CALSTARS CODE 304004-11

PROJECTED ACTIVITIES (blank below = not reported by agency)

Activity:	PHASE 1 - CALMORTGAGE AND SCHOOL SITE PROPERTIES
Activity Status:	NO ACTION - FOR CALMORTGAGE ONLY
Completion Due Date:	
Revised Completion Due Date:	
Date Activity Actually Completed:	01132000
Yards of Solids Removed:	0
Yards of Solids Treated:	0
Gallons of Liquid Removed:	0
Gallons of Liquid Treated:	0

DTSC COMMENTS REGARDING THIS SITE (blank below = not reported by agency)

Comments Date: 01132000

: PHSE1 - Pursuant to an agreement between the Department of Toxic substances Control (DTSC) and the California Department of Education, DTSC's Site Mitigation Program completed a review of a Phase I Environmental Assessment and has determined that No Action is necessary.

**Environmental FirstSearch
Site Detail Report**

Target Property: SEGMENT D
LEBEC CA 93243

JOB: BR RTP-D

STATE

SEARCH ID: 4 **DIST/DIR:** NON GC **ELEVATION:** **MAP ID:**

NAME: CASTAIC HIGH SCHOOL
ADDRESS: RIDGE ROUTE RD
CASTAIC CA 91384
LOS ANGELES
CONTACT:
SOURCE: CA DTSC

REV: 08/04/10
ID1: CAL19650031
ID2: SCHOOL
STATUS: NO FURTHER ACTION
PHONE:

GENERAL SITE INFORMATION

Site Type:	School Investigation
Status:	No Further Action
Status Date:	2005-11-23
NPL Site:	NO
Funding:	School District
Regulatory Agencies Involved:	SMBRP
Lead Agency:	SMBRP
Project Manager:	STEPHANIE LEWIS
Supervisor:	Javier Hinojosa
Branch:	Chatsworth
Acres:	140
Assessor's Parcel Number:	3244-011-902, 3244-012-058, 3244-014-021, 3244-014-022, 3244-015-018, 3244-015-904
Past Uses:	* UNKNOWN
Potential Contaminants:	30015 30330
Confirmed Contaminants:	30330 30015
Potential Media Affected:	SOIL
Restricted Use:	NO
Site Management Required:	NONE SPECIFIED
Special Programs Associated with this Site:	

OTHER SITE NAMES (blank below = not reported by agency)

CASTAIC HIGH SCHOOL

WILLIAM S HART UHSD-PRPSD CASTAIC HS

WILLIAM S. HART UNION HIGH SCHOOL DIST.

3244-011-902

3244-012-058

3244-014-021

3244-014-022

3244-015-018

3244-015-904

304441

19650031

COMPLETED ACTIVITIES AND DTSC COMMENTS REGARDING THIS SITE (blank below = not reported by agency)

Area Name:	PROJECT WIDE
Sub-Area Name:	
Document Type:	Cost Recovery Closeout Memo
Completion Date:	2005-11-23 00:00:00
Comments:	

- Continued on next page -

***Environmental FirstSearch
Site Detail Report***

Target Property: SEGMENT D
 LEBEC CA 93243

JOB: BR RTP-D

STATE

SEARCH ID: 4	DIST/DIR: NON GC	ELEVATION:	MAP ID:
---------------------	-------------------------	-------------------	----------------

NAME: CASTAIC HIGH SCHOOL
ADDRESS: RIDGE ROUTE RD
 CASTAIC CA 91384
 LOS ANGELES
CONTACT:
SOURCE: CA DTSC

REV: 08/04/10
ID1: CAL19650031
ID2: SCHOOL
STATUS: NO FURTHER ACTION
PHONE:

Area Name:	<i>PROJECT WIDE</i>
Sub- Area Name:	
Document Type:	<i>Site Inspections/Visit (Non LUR)</i>
Completion Date:	<i>2004-11-30 00:00:00</i>
Comments:	

Area Name:	<i>PROJECT WIDE</i>
Sub- Area Name:	
Document Type:	<i>Environmental Oversight Agreement</i>
Completion Date:	<i>2004-02-19 00:00:00</i>
Comments:	

Area Name:	<i>PROJECT WIDE</i>
Sub- Area Name:	
Document Type:	<i>Preliminary Endangerment Assessment Report</i>
Completion Date:	<i>2005-11-14 00:00:00</i>
Comments:	<i>PEA approved 11/03/05</i>

Area Name:	<i>PROJECT WIDE</i>
Sub- Area Name:	
Document Type:	<i>Preliminary Endangerment Assessment Workplan</i>
Completion Date:	<i>2004-06-30 00:00:00</i>
Comments:	

Environmental FirstSearch Descriptions

NPL: EPA NATIONAL PRIORITY LIST - The National Priorities List is a list of the worst hazardous waste sites that have been identified by Superfund. Sites are only put on the list after they have been scored using the Hazard Ranking System (HRS), and have been subjected to public comment. Any site on the NPL is eligible for cleanup using Superfund Trust money.

A Superfund site is any land in the United States that has been contaminated by hazardous waste and identified by the Environmental Protection Agency (EPA) as a candidate for cleanup because it poses a risk to human health and/or the environment.

FINAL - Currently on the Final NPL

PROPOSED - Proposed for NPL

NPL DELISTED: EPA NATIONAL PRIORITY LIST Subset - Database of delisted NPL sites. The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

DELISTED - Deleted from the Final NPL

CERCLIS: EPA COMPREHENSIVE ENVIRONMENTAL RESPONSE COMPENSATION AND LIABILITY INFORMATION SYSTEM (CERCLIS)- CERCLIS is a database of potential and confirmed hazardous waste sites at which the EPA Superfund program has some involvement. It contains sites that are either proposed to be or are on the National Priorities List (NPL) as well as sites that are in the screening and assessment phase for possible inclusion on the NPL.

PART OF NPL- Site is part of NPL site

DELETED - Deleted from the Final NPL

FINAL - Currently on the Final NPL

NOT PROPOSED - Not on the NPL

NOT VALID - Not Valid Site or Incident

PROPOSED - Proposed for NPL

REMOVED - Removed from Proposed NPL

SCAN PLAN - Pre-proposal Site

WITHDRAWN - Withdrawn

NFRAP: EPA COMPREHENSIVE ENVIRONMENTAL RESPONSE COMPENSATION AND LIABILITY INFORMATION SYSTEM ARCHIVED SITES - database of Archive designated CERCLA sites that, to the best of EPA's knowledge, assessment has been completed and has determined no further steps will be taken to list this site on the National Priorities List (NPL). This decision does not necessarily mean that there is no hazard associated with a given site; it only means that, based upon available information, the location is not judged to be a potential NPL site.

NFRAP - No Further Remedial Action Plan

P - Site is part of NPL site

D - Deleted from the Final NPL

F - Currently on the Final NPL

N - Not on the NPL

O - Not Valid Site or Incident

P - Proposed for NPL

R - Removed from Proposed NPL

S - Pre-proposal Site

W - Withdrawn

RCRA COR ACT: EPA RESOURCE CONSERVATION AND RECOVERY INFORMATION SYSTEM SITES - Database of hazardous waste information contained in the Resource Conservation and Recovery Act Information (RCRAInfo), a national program management and inventory system about hazardous waste handlers. In general, all generators, transporters, treaters, storers, and disposers of hazardous waste are required to provide information about their activities to state environmental agencies. These agencies, in turn pass on the information to regional and national EPA offices. This regulation is governed by the Resource Conservation and Recovery Act (RCRA), as amended by the Hazardous and Solid Waste Amendments of 1984. RCRAInfo facilities that have reported violations and subject to corrective actions.

RCRA TSD: EPA RESOURCE CONSERVATION AND RECOVERY INFORMATION SYSTEM TREATMENT, STORAGE, and DISPOSAL FACILITIES. - Database of hazardous waste information contained in the Resource Conservation and Recovery Act Information (RCRAInfo), a national program management and inventory system about hazardous waste handlers. In general, all generators, transporters, treaters, storers, and disposers of hazardous waste are required to provide information about their activities to state environmental agencies. These agencies, in turn pass on the information to regional and national EPA offices. This regulation is governed by the Resource Conservation and Recovery Act (RCRA), as amended by the Hazardous and Solid Waste Amendments of 1984.

Facilities that treat, store, dispose, or incinerate hazardous waste.

RCRA GEN: EPA/MA DEP/CT DEP RESOURCE CONSERVATION AND RECOVERY INFORMATION SYSTEM GENERATORS - Database of hazardous waste information contained in the Resource Conservation and Recovery Act Information (RCRAInfo), a national program management and inventory system about hazardous waste handlers. In general, all generators, transporters, treaters, storers, and disposers of hazardous waste are required to provide information about their activities to state environmental agencies. These agencies, in turn pass on the information to regional and national EPA offices. This regulation is governed by the Resource Conservation and Recovery Act (RCRA), as amended by the Hazardous and Solid Waste Amendments of 1984.

Facilities that generate or transport hazardous waste or meet other RCRA requirements.

LGN - Large Quantity Generators

SGN - Small Quantity Generators

VGN - Conditionally Exempt Generator.

Included are RAATS (RCRA Administrative Action Tracking System) and CMEL (Compliance Monitoring & Enforcement List) facilities.

CONNECTICUT HAZARDOUS WASTE MANIFEST - Database of all shipments of hazardous waste within, into or from Connecticut. The data includes date of shipment, transporter and TSD info, and material shipped and quantity. This data is appended to the details of existing generator records.

MASSACHUSETTES HAZARDOUS WASTE GENERATOR - database of generators that are regulated under the MA DEP.

VQN-MA = generates less than 220 pounds or 27 gallons per month of hazardous waste or waste oil.

SQN-MA = generates 220 to 2,200 pounds or 27 to 270 gallons per month of waste oil.

LQG-MA = generates greater than 2,200 lbs of hazardous waste or waste oil per month.

RCRA NLR: EPA RESOURCE CONSERVATION AND RECOVERY INFORMATION SYSTEM SITES - Database of hazardous waste information contained in the Resource Conservation and Recovery Act Information (RCRAInfo), a national program management and inventory system about hazardous waste handlers. In general, all generators, transporters, treaters, storers, and disposers of hazardous waste are required to provide information about their activities to state environmental agencies. These agencies, in turn pass on the information to regional and national EPA offices. This regulation is governed by the Resource Conservation and Recovery Act (RCRA), as amended by the Hazardous and Solid Waste Amendments of 1984.

Facilities not currently classified by the EPA but are still included in the RCRAInfo database. Reasons for non classification:

Failure to report in a timely matter.

No longer in business.

No longer in business at the listed address.

No longer generating hazardous waste materials in quantities which require reporting.

ERNS: EPA/NRC EMERGENCY RESPONSE NOTIFICATION SYSTEM (ERNS) - Database of incidents reported to the National Response Center. These incidents include chemical spills, accidents involving chemicals (such as fires or explosions), oil spills, transportation accidents that involve oil or chemicals, releases of radioactive materials, sightings of oil sheens on bodies of water, terrorist incidents involving chemicals, incidents where illegally dumped chemicals have been found, and drills intended to prepare responders to handle these kinds of incidents. Data since January 2001 has been received from the National Response System database as the EPA no longer maintains this data.

Tribal Lands: DOI/BIA INDIAN LANDS OF THE UNITED STATES - Database of areas with boundaries established by treaty, statute, and (or) executive or court order, recognized by the Federal Government as territory in which American Indian tribes have primary governmental authority. The Indian Lands of the United States map layer shows areas of 640 acres or more, administered by the Bureau of Indian Affairs. Included are

Federally-administered lands within a reservation which may or may not be considered part of the reservation.
BUREAU OF INDIAN AFFAIRS CONTACT - Regional contact information for the Bureau of Indian Affairs offices.

State/Tribal Sites: CA EPA SMBRPD / CAL SITES- The California Department of Toxic Substances Control (DTSC) has developed an electronic database system called Envirostor with information about sites that are known to be contaminated with hazardous substances as well as information on uncharacterized properties where further studies may reveal problems. The Site Mitigation and Brownfields Reuse Program Database (SMBRPD), formerly known as CalSites, is used primarily by DTSC's staff as an informational tool to evaluate and track activities at properties that may have been affected by the release of hazardous substances. The SMBRPD displays information in six categories, two of which are found in ST. The categories listed under ST are:

1. State Response Sites.
2. School Property Evaluation Program Properties (SCH)

Please Note: Our reports list the above sites as DB Type (STATE). Other categories found in the SMBRPD are listed in our reports in the DB Types OT and VC.

Each Category contains information on properties based upon the type of work taking place at the site. State Response Sites contains only known and potential hazardous substance release sites considered as posing the greatest threat to the public. School sites included in ST will be found within the SMBRPD's School Property Evaluation Program.

CORTESE LIST-Pursuant to Government Code Section 65962.5, the Hazardous Waste and Substances Sites List has been compiled by Cal/EPA, Hazardous Materials Data Management Program to provide information about the location of hazardous materials release sites. Cortese List sites that fall under DTSC's guidelines for State Response sites are included in our reports in the ST category as are qualifying sites from the Annual Work Plan (formerly Bond Expenditure Plan) and the historic ASPIS databases.

State Spills 90: CA EPA SLIC REGIONS 1 - 9- The California Regional Water Quality Control Boards maintain report of sites that have records of spills, leaks, investigation, and cleanups.

State/Tribal SWL: CA IWMB/SWRCB/COUNTY SWIS SOLID WASTE INFORMATION SYSTEM-The California Integrated Waste Management Board maintains a database on solid waste facilities, operations, and disposal sites throughout the state of California. The types of facilities found in this database include landfills, transfer stations, material recovery facilities, composting sites, transformation facilities, waste tire sites, and closed disposal sites. For more information on individual sites call the number listed in the source field..

Please Note: This database contains poor site location information for many sites in our reports; therefore, it may not be possible to locate or plot some sites in our reports.

WMUDS-The State Water Resources Control Board maintained the Waste Management Unit Database System (WMUDS). It is no longer updated. It tracked management units for several regulatory programs related to waste management and its potential impact on groundwater. Two of these programs (SWAT & TPCA) are no longer on-going regulatory programs as described below. Chapter 15 (SC15) is still an on-going regulatory program and information is updated periodically but not to the WMUDS database. The WMUDS System contains information from the following agency databases: Facility, Waste Management Unit (WMU), Waste Discharger System (WDS), SWAT, Chapter 15, TPCA, RCRA, Inspections, Violations, and Enforcement's.

Note: This database contains poor site location information for many sites in our reports; therefore, it may not be possible to locate or plot some sites in reports.

ORANGE COUNTY LANDFILLS LIST- A list maintained by the Orange County Health Department.

State/Tribal LUST: CA SWRCB/COUNTY LUSTIS- The State Water Resources Control Board maintains a database of sites with confirmed or unconfirmed leaking underground storage tanks. Information for this database is collected from the states regional boards quarterly and integrated with this database.

SAN DIEGO COUNTY LEAKING TANKS- The San Diego County Department of Environmental Health maintains a database of sites with confirmed or unconfirmed leaking underground storage tanks within its HE17/58 database. For more information on a specific file call the HazMat Duty Specialist at phone number listed in the source information field.

State/Tribal UST/AST: CA EPA/COUNTY/CITY ABOVEGROUND STORAGE TANKS LISTING-The Above Ground Petroleum Storage Act became State Law effective January 1, 1990. In general, the law requires owners or operators of AST's with petroleum products to file a storage statement and pay a fee by July 1, 1990 and every two years thereafter, take specific action to prevent spills, and in certain instances implement a groundwater monitoring program. This law does not apply to that portion of a tank facility associated with the

production oil and regulated by the State Division of Oil and Gas of the Dept. of Conservation.

SWEEPS / FIDS STATE REGISTERED UNDERGROUND STORAGE TANKS- Until 1994 the State Water Resources Control Board maintained a database of registered underground storage tanks statewide referred to as the SWEEPS System. The SWEEPS UST information was integrated with the CAL EPA's Facility Index System database (FIDS) which is a master index of information from numerous California agency environmental databases. That was last updated in 1994. We have included the UST information from the FIDS database in our reports for historical purposes to help our clients identify where tanks may possibly have existed. For more information on specific sites from individual paper files archived at the State Water Resources Control Board call the number listed with the source information.

INDIAN LANDS UNDERGROUND STORAGE TANKS LIST- A listing of underground storage tanks currently on Indian Lands under federal jurisdiction. California Indian Land USTs are administered by US EPA Region 9.

CUPA DATABASES & SOURCES- Definition of a CUPA: A Certified Unified Program Agency (CUPA) is a local agency that has been certified by the CAL EPA to implement six state environmental programs within the local agency's jurisdiction. These can be a county, city, or JPA (Joint Powers Authority). This program was established under the amendments to the California Health and Safety Code made by SB 1082 in 1994.

A Participating Agency (PA) is a local agency that has been designated by the local CUPA to administer one or more Unified Programs within their jurisdiction on behalf of the CUPA. A Designated Agency (DA) is an agency that has not been certified by the CUPA but is the responsible local agency that would implement the six unified programs until they are certified.

Please Note: We collect and maintains information regarding Underground Storage Tanks from the majority of the CUPAS and Participating Agencies in the State of California. These agencies typically do not maintain nor release such information on a uniform or consistent schedule; therefore, currency of the data may vary. Please look at the details on a specific site with a UST record in the First Search Report to determine the actual currency date of the record as provided by the relevant agency. Numerous efforts are made on a regular basis to obtain updated records.

State/Tribal IC: CA EPA DEED-RESTRICTED SITES LISTING- The California EPA's Department of Toxic Substances Control Board maintains a list of deed-restricted sites, properties where the DTSC has placed limits or requirements on the future use of the property due to varying levels of cleanup possible, practical or necessary at the site.

State/Tribal VCP: CA EPA SMBRPD / CAL SITES- The California Department of Toxic Substances Control (DTSC) has developed an electronic database system called Envirostor with information about sites that are known to be contaminated with hazardous substances as well as information on uncharacterized properties where further studies may reveal problems. The Site Mitigation and Brownfields Reuse Program Database (SMBRPD), formerly known as CalSites, is used primarily by DTSC's staff as an informational tool to evaluate and track activities at properties that may have been affected by the release of hazardous substances. The Voluntary Cleanup Program (VCP) category contains only those properties undergoing voluntary investigation and/or cleanup and which are listed in the Voluntary Cleanup Program.

Please Note: Our reports list the above sites as DB Type VC.

RADON: NTIS NATIONAL RADON DATABASE - EPA radon data from 1990-1991 national radon project collected for a variety of zip codes across the United States.

State Permits: CA EPA/COUNTY SAN DIEGO COUNTY HE17 PERMITS- The HE17/58 database tracks establishments issued permits and the status of their permits in relation to compliance with federal, state, and local regulations that the County oversees. It tracks if a site is a hazardous waste generator, TSD, gas station, has underground tanks, violations, or unauthorized releases. For more information on a specific file call the HazMat Duty Specialist at the phone number listed in the source information field.

SAN BERNARDINO COUNTY HAZARDOUS MATERIALS PERMITS- Handlers and Generators Permit Information Maintained by the Hazardous Materials Division.

State Other: CA EPA/COUNTY SMBRPD / CAL SITES- The California Department of Toxic Substances Control (DTSC) has developed an electronic database system called Envirostor with information about sites that are known to be contaminated with hazardous substances as well as information on uncharacterized properties where further studies may reveal problems. The Site Mitigation and Brownfields Reuse Program Database (SMBRPD), formerly known as CalSites, is used primarily by DTSC's staff as an informational tool to evaluate and track activities at properties that may have been affected by the release of hazardous substances.

The SMBRPD displays information in six categories, two of which are found in ST. The categories listed under

OT are:

1. Unconfirmed Properties Referred to Another Local or State Agency (REF)

2. Properties where a No Further Action Determination has been made (NFA)

Please Note: Our reports list the above sites as DB Type (OTHER). Other categories found in the SMBRPD are listed in our reports in the DB Types ST and VC.

LA COUNTY SITE MITIGATION COMPLAINT CONTROL LOG- The County of Los Angeles Public Health Investigation Compliant Control Log.

ORANGE COUNTY INDUSTRIAL SITE CLEANUPS- List maintained by the Orange County Environmental Health Agency.

RIVERSIDE COUNTY WASTE GENERATORS-A list of facilities in Riverside County which generate hazardous waste.

SACRAMENTO COUNTY MASTER HAZMAT LIST-Master list of facilities within Sacramento County with potentially hazardous materials.

SACRAMENTO COUNTY TOXIC SITE CLEANUPS-A list of sites where unauthorized releases of potentially hazardous materials have occurred.

HW Manifest: *CA EPA* DEPARTMENT OF TOXIC SUBSTANCES CONTROL HAZARDOUS WASTE MANIFEST INVENTORY-Records maintained by the CA DTSC of Hazardous Waste Manifests used to track and document the transport of hazardous waste from a generator's site to the site of its final disposition.

Environmental FirstSearch Database Sources

NPL: EPA Environmental Protection Agency

Updated quarterly

NPL DELISTED: EPA Environmental Protection Agency

Updated quarterly

CERCLIS: EPA Environmental Protection Agency

Updated quarterly

NFRAP: EPA Environmental Protection Agency.

Updated quarterly

RCRA COR ACT: EPA Environmental Protection Agency.

Updated quarterly

RCRA TSD: EPA Environmental Protection Agency.

Updated quarterly

RCRA GEN: EP/MA DEP/CT DEP Environmental Protection Agency, Massachusetts Department of Environmental Protection, Connecticut Department of Environmental Protection

Updated quarterly

RCRA NLR: EPA Environmental Protection Agency

Updated quarterly

ERNS: EPA/NRC Environmental Protection Agency

Updated annually

Tribal Lands: DOI/BIA United States Department of the Interior

Updated annually

State/Tribal Sites: CA EPA The CAL EPA, Depart. Of Toxic Substances Control
Phone: (916) 323-3400

Updated quarterly/when available

State Spills 90: CA EPA The California State Water Resources Control Board

Updated when available

State/Tribal SWL: CA IWMB/SWRCB/COUNTY The California Integrated Waste Management Board
Phone:(916) 255-2331
The State Water Resources Control Board
Phone:(916) 227-4365
Orange County Health Department

Updated quarterly/when available

State/Tribal LUST: CA SWRCB/COUNTY The California State Water Resources Control Board
Phone:(916) 227-4416
San Diego County Department of Environmental Health

Updated quarterly/when available

State/Tribal UST/AST: CA EPA/COUNTY/CITY The State Water Resources Control Board
Phone:(916) 227-4364
CAL EPA Department of Toxic Substances Control
Phone:(916)227-4404
US EPA Region 9 Underground Storage Tank Program
Phone: (415) 972-3372
ALAMEDA COUNTY CUPAS:
* County of Alameda Department of Environmental Health
* Cities of Berkeley, Fremont, Hayward, Livermore / Pleasanton, Newark, Oakland, San Leandro, Union
ALPINE COUNTY CUPA:
* Health Department (Only updated by agency sporadically)
AMADOR COUNTY CUPA:
* County of Amador Environmental Health Department
BUTTE COUNTY CUPA
* County of Butte Environmental Health Division (Only updated by agency biannually)
CALAVERAS COUNTY CUPA:
* County of Calaveras Environmental Health Department
COLUSA COUNTY CUPA:
* Environmental Health Dept.
CONTRA COSTA COUNTY CUPA:
* Hazardous Materials Program
DEL NORTE COUNTY CUPA:
* Department of Health and Social Services
EL DORADO COUNTY CUPAS:
* County of El Dorado Environmental Health - Solid Waste Div (Only updated by agency annually)
* County of El Dorado EMD Tahoe Division (Only updated by agency annually)
FRESNO COUNTY CUPA:
* Haz. Mat and Solid Waste Programs
GLENN COUNTY CUPA:
* Air Pollution Control District
HUMBOLDT COUNTY CUPA:
* Environmental Health Division
IMPERIAL COUNTY CUPA:
* Department of Planning and Building
INYO COUNTY CUPA:
* Environmental Health Department

KERN COUNTY CUPA:

- * County of Kern Environmental Health Department
- * City of Bakersfield Fire Department

KINGS COUNTY CUPA:

- * Environmental Health Services

LAKE COUNTY CUPA:

- * Division of Environmental Health

LASSEN COUNTY CUPA:

- * Department of Agriculture

LOS ANGELES COUNTY CUPAS:

- * County of Los Angeles Fire Department CUPA Data as maintained by the Los Angeles County Department of Public Works
- * County of Los Angeles Environmental Programs Division
- * Cities of Burbank, El Segundo, Glendale, Long Beach/Signal Hill, Los Angeles, Pasadena, Santa Fe Springs, Santa Monica, Torrance, Vernon

MADERA COUNTY CUPA:

- * Environmental Health Department

MARIN COUNTY CUPA:

- * County of Marin Office of Waste Management
- * City of San Rafael Fire Department

MARIPOSA COUNTY CUPA:

- * Health Department

MENDOCINO COUNTY CUPA:

- * Environmental Health Department

MERCED COUNTY CUPA:

- * Division of Environmental Health

MODOC COUNTY CUPA:

- * Department of Agriculture

MONO COUNTY CUPA:

- * Health Department

MONTEREY COUNTY CUPA:

- * Environmental Health Division

NAPA COUNTY CUPA:

- * Hazardous Materials Section

NEVADA COUNTY CUPA:

- * Environmental Health Department

ORANGE COUNTY CUPAS:

- * County of Orange Environmental Health Department
- * Cities of Anaheim, Fullerton, Orange, Santa Ana
- * County of Orange Environmental Health Department

PLACER COUNTY CUPAS:

- * County of Placer Division of Environmental Health Field Office
- * Tahoe City
- * City of Roseville Roseville Fire Department

PLUMAS COUNTY CUPA:

- * Environmental Health Department

RIVERSIDE COUNTY CUPA:

- * Environmental Health Department

SACRAMENTO COUNTY CUPA:

- * County Environmental Mgmt Dept, Haz. Mat. Div.

SAN BENITO COUNTY CUPA:

- * City of Hollister Environmental Service Department

SAN BERNARDINO COUNTY CUPAS:

- * County of San Bernardino Fire Department, Haz. Mat. Div.
- * City of Hesperia Hesperia Fire Prevention Department
- * City of Victorville Victorville Fire Department

SAN DIEGO COUNTY CUPA:

- * The San Diego County Dept. of Environmental Health HE 17/58

SAN FRANCISCO COUNTY CUPA:

- * Department of Public Health

SAN JOAQUIN COUNTY CUPA:

- * Environmental Health Division

SAN LUIS OBISPO COUNTY CUPAS:

- * County of San Luis Obispo Environmental Health Division
- * City of San Luis Obispo City Fire Department

SAN MATEO COUNTY CUPA:

- * Environmental Health Department

SANTA BARBARA COUNTY CUPA:

- * County Fire Dept Protective Services Division

SANTA CLARA COUNTY CUPAS:

- * County of Santa Clara Hazardous Materials Compliance Division
- * Santa Clara County Central Fire Protection District (Covers Campbell, Cupertino, Los Gatos, & Morgan Hill)
- * Cities of Gilroy, Milpitas, Mountain View, Palo Alto, San Jose Fire, Santa Clara, Sunnyvale

SANTA CRUZ COUNTY CUPA:

- * Environmental Health Department

SHASTA COUNTY CUPA:

- * Environmental Health Department

SIERRA COUNTY CUPA:

- * Health Department

SISKIYOU COUNTY CUPA:

- * Environmental Health Department

SONOMA COUNTY CUPAS:

- * County of Sonoma Department Of Environmental Health
- * Cities of Healdsburg / Sebastopol, Petaluma, Santa Rosa

STANISLAUS COUNTY CUPA:

- * Department of Environmental Resources Haz. Mat. Division

SUTTER COUNTY CUPA:

- * Department of Agriculture

TEHAMA COUNTY CUPA:

- * Department of Environmental Health

TRINITY COUNTY CUPA:

- * Department of Health

TULARE COUNTY CUPA:

- * Environmental Health Department

TUOLUMNE COUNTY CUPA:

- * Environmental Health

VENTURA COUNTY CUPAS:

- * County of Ventura Environmental Health Division
- * Cities of Oxnard, Ventura

YOLO COUNTY CUPA:

- * Environmental Health Department

YUBA COUNTY CUPA:

Updated quarterly/annually/when available

State/Tribal IC: CA EPA The California EPA Department of Toxic Substances Control.

Updated Updated quarterly/annually/when available

State/Tribal VCP: CA EPA The California EPA Department of Toxic Substances Control.

Updated Updated quarterly/annually/when available

RADON: NTIS Environmental Protection Agency, National Technical Information Services

Updated periodically

State Permits: CA EPA/COUNTY The San Diego County Depart. Of Environmental Health
Phone:(619) 338-2211
San Bernardino County Fire Department

Updated quarterly/when available

State Other: CA EPA/COUNTY The CAL EPA, Depart. Of Toxic Substances Control
Phone: (916) 323-3400
The Los Angeles County Hazardous Materials Division
Phone: (323) 890-7806
Orange County Environmental Health Agency
Phone: (714) 834-3536
Riverside County Department of Environmental Health, Hazardous Materials Management Division
Phone:(951) 358-5055
Sacramento County Environmental Management Department

Updated quarterly/when available

HW Manifest: CA EPA
CAL EPA, Department of Toxic Substances Control

Updated annually/when available

TRACK ► INFO SERVICES, LLC

Environmental FirstSearch™ Report

Target Property:

SEGMENT F AND I

LANCASTER CA 93536

Job Number: BR RTP-FI

PREPARED FOR:

Power Engineers, Inc.
731 E Ball Road Suite 100
Anaheim, CA 92805
(949) 280-7922

09-20-10



Tel: (866) 664-9981

Fax: (818) 249-4227

***Environmental FirstSearch
Site Information Report***

Request Date: 09-20-10
Requestor Name: Royce Company
Standard: ASTM-05

Search Type: LINEAR
25.09 mile(s)
Job Number: BRRTF-FI
Filtered Report

Target Site: SEGMENT F AND I
LANCASTER CA 93536

Demographics

Sites: 17	Non-Geocoded: 9	Population: NA
Radon: 0.6 PCI/L		

Site Location

	<u>Degrees (Decimal)</u>	<u>Degrees (Min/Sec)</u>		<u>UTMs</u>
Longitude:	-118.357764	-118:21:28	Easting:	375493.963
Latitude:	34.599397	34:35:58	Northing:	3829260.625
Elevation:	N/A		Zone:	11

Comment

Comment:

Additional Requests/Services

Adjacent ZIP Codes: 1 Mile(s)

Services:

ZIP					Requested?		Date
Code	City Name	ST	Dist/Dir	Sel			
91350	SANTA CLARITA	CA	0.42 SW	Y	Fire Insurance Maps	No	
91351	CANYON COUNTRY	CA	0.94 SE	Y	Aerial Photographs	No	
91387	CANYON COUNTRY	CA	0.93 SE	Y	Historical Topos	No	
91390	SANTA CLARITA	CA	0.00 --	Y	City Directories	No	
93510	ACTON	CA	0.00 --	Y	Title Search/Env Liens	No	
93551	PALMDALE	CA	0.00 --	Y	Municipal Reports	No	
					Online Topos	No	

Environmental FirstSearch Search Summary Report

Target Site: SEGMENT F AND I
LANCASTER CA 93536

FirstSearch Summary

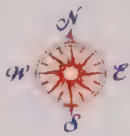
Database	Sel	Updated	Radius	Site	1/8	1/4	1/2	1/2>	ZIP	TOTALS
NPL	Y	08-01-10	1.00	0	0	0	0	0	0	0
NPL Delisted	Y	08-02-10	0.50	0	0	0	0	-	0	0
CERCLIS	Y	07-02-10	0.50	0	0	0	0	-	0	0
NFRAP	Y	07-02-10	0.50	0	1	0	0	-	0	1
RCRA COR ACT	Y	07-14-10	1.00	0	0	0	0	0	0	0
RCRA TSD	Y	07-14-10	0.50	0	0	0	0	-	0	0
RCRA GEN	Y	07-14-10	0.25	0	1	0	-	-	0	1
RCRA NLR	Y	07-14-10	0.12	0	0	-	-	-	0	0
Federal Brownfield	Y	07-06-10	0.25	0	0	0	-	-	0	0
ERNS	Y	07-23-10	0.12	0	0	-	-	-	0	0
Tribal Lands	Y	12-01-05	1.00	0	0	0	0	0	2	2
State/Tribal Sites	Y	08-04-10	1.00	0	0	1	1	0	1	3
State Spills 90	Y	06-22-10	0.12	0	0	-	-	-	0	0
State/Tribal SWL	Y	06-21-10	0.50	0	0	0	0	-	1	1
State/Tribal LUST	Y	06-22-10	0.50	0	1	1	0	-	4	6
State/Tribal UST/AST	Y	03-10-10	0.25	0	1	1	-	-	0	2
State/Tribal EC	Y	NA	0.25	0	0	0	-	-	0	0
State/Tribal IC	Y	08-04-10	0.25	0	0	0	-	-	0	0
State/Tribal VCP	Y	08-04-10	0.50	0	0	0	0	-	0	0
State/Tribal Brownfields	Y	NA	0.50	0	0	0	0	-	0	0
State Permits	Y	06-22-10	0.12	0	0	-	-	-	0	0
State Other	Y	08-04-10	0.25	0	0	0	-	-	1	1
Federal IC/EC	Y	08-26-10	0.50	0	0	0	0	-	0	0
HW Manifest	Y	08-02-10	0.12	0	0	-	-	-	0	0
- TOTALS -				0	4	3	1	0	9	17

Notice of Disclaimer

Due to the limitations, constraints, inaccuracies and incompleteness of government information and computer mapping data currently available to TRACK Info Services, certain conventions have been utilized in preparing the locations of all federal, state and local agency sites residing in TRACK Info Services's databases. All EPA NPL and state landfill sites are depicted by a rectangle approximating their location and size. The boundaries of the rectangles represent the eastern and western most longitudes; the northern and southern most latitudes. As such, the mapped areas may exceed the actual areas and do not represent the actual boundaries of these properties. All other sites are depicted by a point representing their approximate address location and make no attempt to represent the actual areas of the associated property. Actual boundaries and locations of individual properties can be found in the files residing at the agency responsible for such information.

Waiver of Liability

Although TRACK Info Services uses its best efforts to research the actual location of each site, TRACK Info Services does not and can not warrant the accuracy of these sites with regard to exact location and size. All authorized users of TRACK Info Services's services proceeding are signifying an understanding of TRACK Info Services's searching and mapping conventions, and agree to waive any and all liability claims associated with search and map results showing incomplete and or inaccurate site locations.

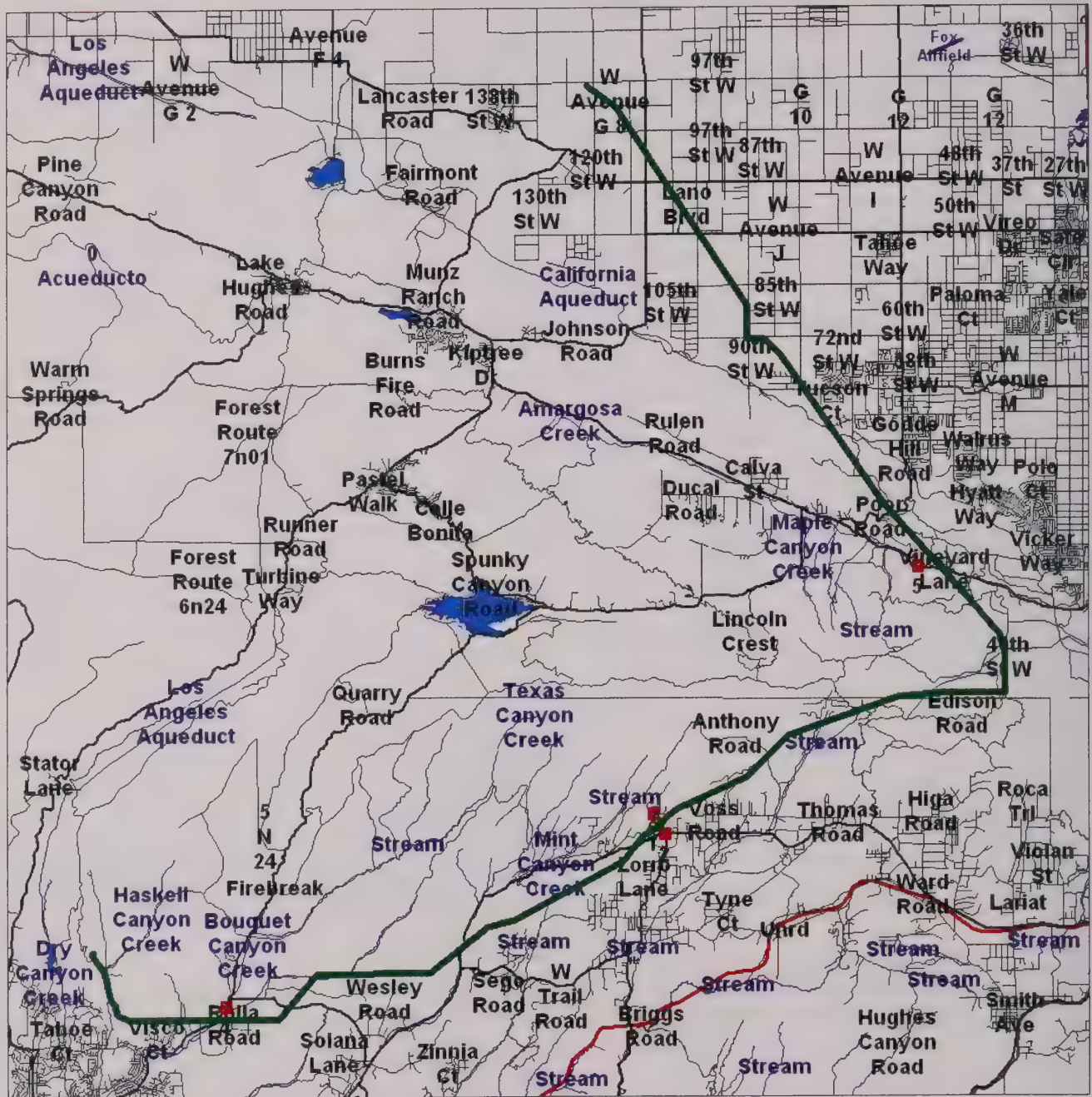


Environmental FirstSearch

1 Mile Radius from Line
Single Map:



SEGMENT F AND I , LANCASTER CA 93536



Source: U.S. Census TIGER Files

- Linear Search Line
- Identified Site, Multiple Sites, Receptor
- NPL, DELNPL, Brownfield, Solid Waste Landfill (SWL), Hazardous Waste
- Triballand.....
- Railroads



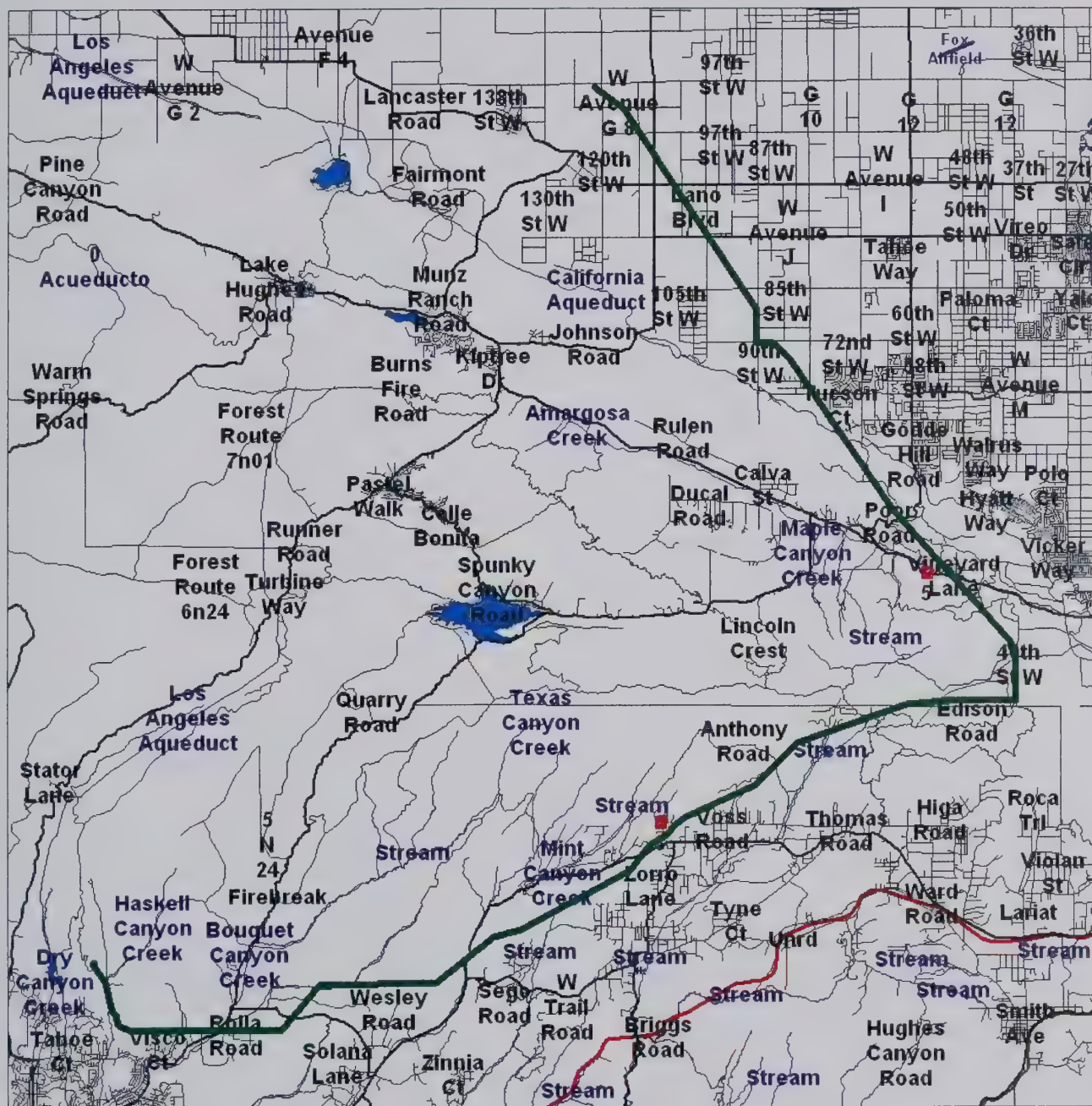


Environmental FirstSearch

1 Mile Radius from Line
ASTM-05: NPL, RCRACOR, STATE



SEGMENT F AND I , LANCASTER CA 93536



Source: U.S. Census TIGER Files

Linear Search Line
Identified Site, Multiple Sites, Receptor
NPL, DELNPL, Brownfield, Solid Waste Landfill (SWL), Hazardous Waste
Triballand.....
Railroads



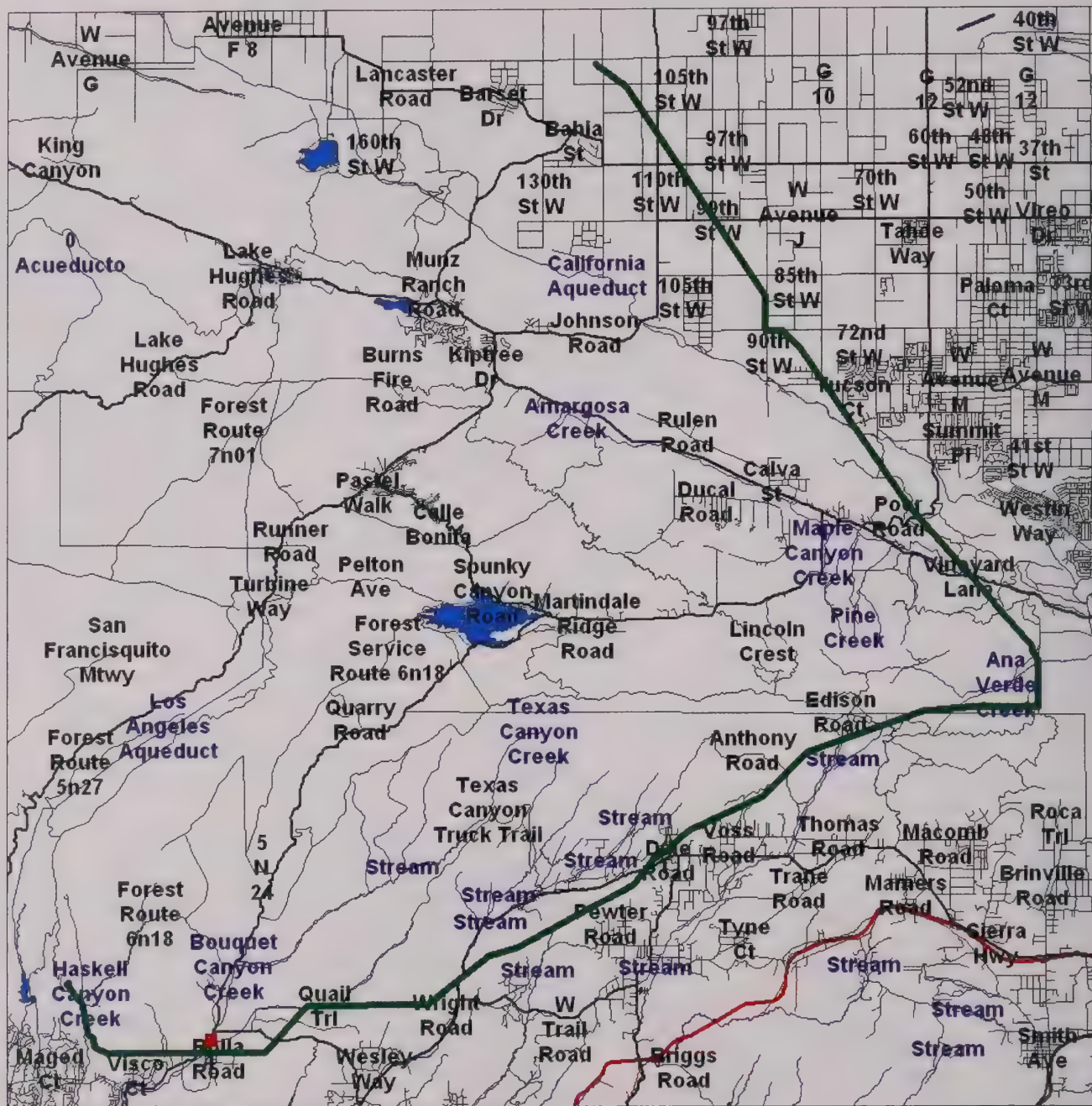


Environmental FirstSearch

.5 Mile Radius from Line
ASTM-05: Multiple Databases



SEGMENT F AND I , LANCASTER CA 93536

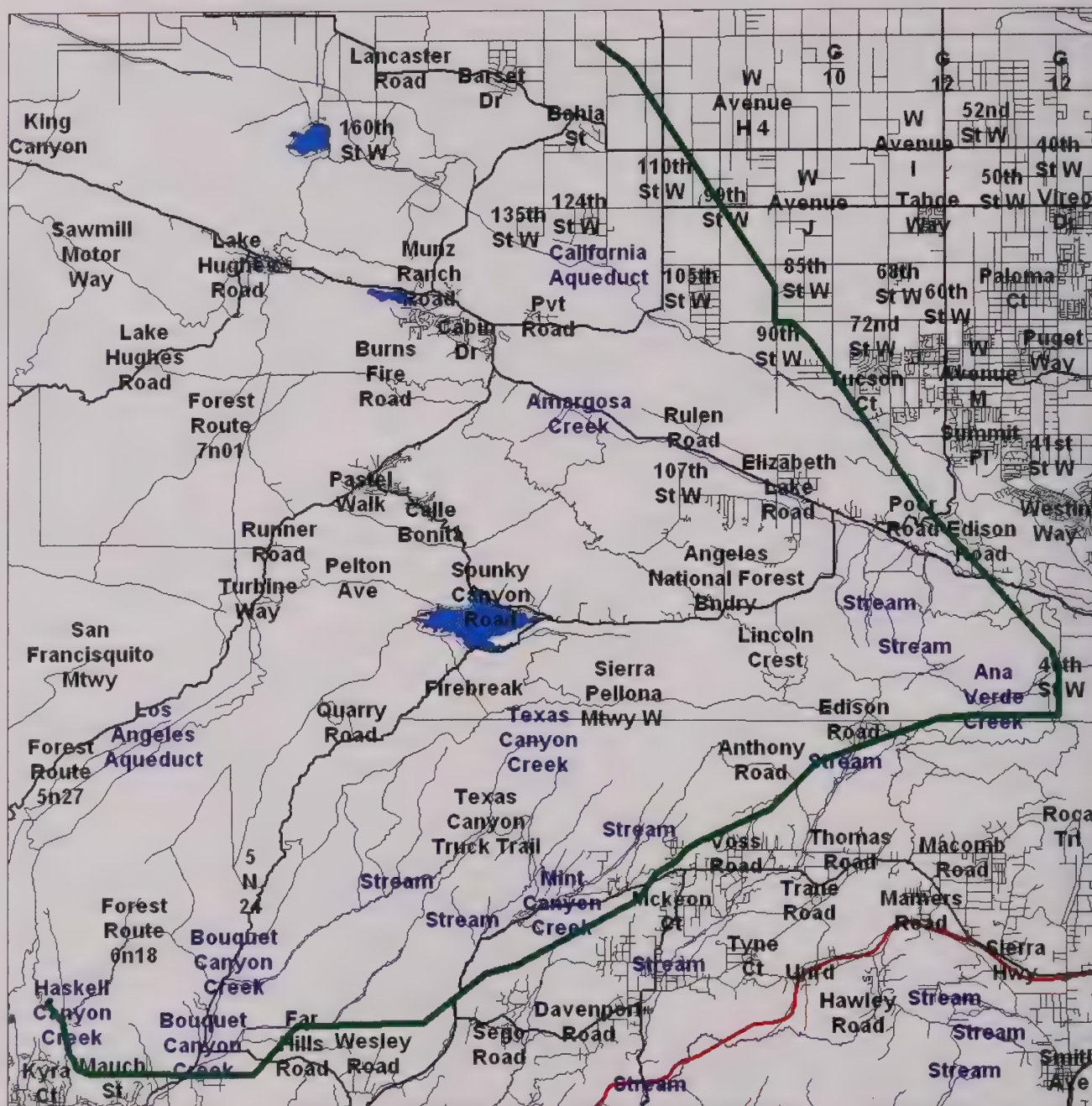


Source: U.S. Census TIGER Files

Linear Search Line
Identified Site, Multiple Sites, Receptor
NPL, DELNPL, Brownfield, Solid Waste Landfill (SWL), Hazardous Waste
Triballand
Railroads



SEGMENT F AND I , LANCASTER CA 93536



Source: U.S. Census TIGER Files

Linear Search Line
 Identified Site, Multiple Sites, Receptor
 NPL, DELNPL, Brownfield, Solid Waste Landfill (SWL), Hazardous Waste
 Triballand.....
 Railroads.....

Environmental FirstSearch Sites Summary Report

Target Property: SEGMENT F AND I
LANCASTER CA 93536

JOB: BR RTP-FI

TOTAL: 17 **GEOCODED:** 8 **NON GEOCODED:** 9 **SELECTED:** 17

DB Type	Site Name/ID/Status	Address	Dist/Dir	ElevDiff	Map ID	Page No.
RCRAGN	AIRESEARCH MFG CO OF CA CAT080010671/SGN	34854 PETERSON RD SAUGUS CA 91350	0.08 NW	N/A	1	1
UST	SPACE ORDINANCE SYSTEMS TISID-STATE3708/INACTIVE	34854 PETERSEN SAUGUS CA 91351	0.08 NW	N/A	1	2
LUST	SPACE ORDINANCE SYSTEMS T0603704768/OPEN - SITE ASSESSME	34854 PETERSON RD CANYON COUNTRY CA 91350	0.08 NW	N/A	1	3
NFRAP	SPACE ORDINANCE SYSTEMS MINT CY CAD000819847/NFRAP-N	34854 PETERSON RD CANYON COUNTRY CA 91350	0.08 NW	N/A	1	4
UST	PEPPER TREE MARKET LACO026878/NOT REPORTED	9661 W SIERRA HWY AQUA DULCE CA 91350	0.20 SE	N/A	2	6
STATE	SOS - MINT CANYON FACILITY CAL19340736/CERTIFIED	34854 PETERSON RD CANYON COUNTRY CA 91351	0.22 NW	N/A	3	9
LUST	LA RETARDED CITIZENS FOUND. T0603704157/COMPLETED - CASE CLO	29880 BOUQUET CANYON RD N SAUGUS CA 91350	0.24 NE	N/A	4	11
STATE	PROPOSED HIGH SCHOOL 10 CAL70000187/INACTIVE - ACTION RE	ELIZABETH LAKE ROAD AND CHE PALMDALE CA 93550	0.31 SW	N/A	5	12

Environmental FirstSearch Sites Summary Report

Target Property: SEGMENT F AND I
LANCASTER CA 93536

JOB: BR RTP-FI

TOTAL: 17 **GEOCODED:** 8 **NON GEOCODED:** 9 **SELECTED:** 17

DB Type	Site Name/ID/Status	Address	Dist/Dir	ElevDiff	Map ID	Page No.
SWL	90TH STREET AND AVENUE L - IDS SWIS19-AA-5753/CLOSED	90TH STREET WEST AND AVENUE LANCASTER CA 93536	NON GC	N/A		13
TRIBALLAND	BUREAU OF INDIAN AFFAIRS CONTA BIA-91390	UNKNOWN CA 91390	NON GC	N/A		14
OTHER	PROPOSED ELEMENTARY SCHOOL SIT CAL60000622/NO FURTHER ACTION	AVENUE L-12 AND 82ND STREET LANCASTER CA 93551	NON GC	N/A		16
LUST	NORTH FORK T0603700205/COMPLETED - CASE CLO	T4N R13-W33 SAUGUS CA 91350	NON GC	N/A		18
LUST	SAN FRANCISQUITO POWER PLANT 1 T0603705256/COMPLETED - CASE CLO	3700 CLEAR CREEK CANYON RD SANTA CLARITA CA 91350	NON GC	N/A		19
LUST	UNION OIL COMPANY/UNOCAL STATI T0603702728/OPEN - SITE ASSESSME	DEL VALLE OIL FIELD VALENCIA CA 91350	NON GC	N/A		20
LUST	USDA FOREST SERVICE NORTH FOL T0603700106/COMPLETED - CASE CLO	T4N-R13W-SEC 33-NW ACTON CA 91350	NON GC	N/A		21
TRIBALLAND	BUREAU OF INDIAN AFFAIRS CONTA BIA-93536	UNKNOWN CA 93536	NON GC	N/A		22
STATE	PROPOSED ELEMENTARY SCHOOL SIT CAL60000622/NO FURTHER ACTION	AVENUE L-12 AND 82ND STREET LANCASTER CA 93551	NON GC	N/A		24

***Environmental FirstSearch
Site Detail Report***

Target Property: SEGMENT F AND I
 LANCASTER CA 93536

JOB: BR RTP-FI

RCRAGN

SEARCH ID: 2	DIST/DIR: 0.08 NW	ELEVATION: 2696	MAP ID: 1
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NAME: AIRESEARCH MFG CO OF CA	REV: 7/14/10
ADDRESS: 34854 PETERSON RD	ID1: CAT080010671
SAUGUS CA 91350	ID2:
LOS ANGELES	STATUS: SGN
CONTACT:	PHONE:
SOURCE: EPA	

SITE INFORMATION

CONTACT INFORMATION: ENVIRONMENTAL MANAGER
 34854 PETERSON RD
 SAUGUS CA 91350

PHONE: 2135123866

UNIVERSE INFORMATION:

NAIC INFORMATION

336413 - OTHER AIRCRAFT PARTS AND AUXILIARY EQUIPMENT MANUFACTURING

ENFORCEMENT INFORMATION:

VIOLATION INFORMATION:

Environmental FirstSearch

Site Detail Report

Target Property: SEGMENT F AND I
LANCASTER CA 93536

JOB: BR RTP-FI

UST			
SEARCH ID: 6	DIST/DIR: 0.08 NW	ELEVATION: 2696	MAP ID: 1
NAME: SPACE ORDNANCE SYSTEMS		REV: 01/01/94	
ADDRESS: 34854 PETERSEN		ID1: TISID-STATE3708	
SAUGUS CA 91351		ID2:	
Los Angeles		STATUS: INACTIVE	
CONTACT:		PHONE:	
SOURCE:			
UST HISTORICAL DATA			
<p>This site was listed in the FIDS Zip Code List as a UST site. The Office of Hazardous Data Management produced the FIDS list. The FIDS list is an index of names and locations of sites recorded in various California State environmental agency databases. It is sorted by zip code and as an index, details regarding the sites were never included.</p> <p>The UST information included in FIDS as provided by the Office of Hazardous Data Management was originally collected from the SWEEPS database. The SWEEPS database recorded Underground Storage Tanks and was maintained by the State Water Resources Control Board (SWRCB). That agency no longer maintains the SWEEPS database and last updated it in 1994. The last release of that 1994 database was in 1997.</p> <p>Oversight of Underground Storage Tanks within California is now conducted by Certified Unified Program Agencies referred to as CUPA s. There are approximately 102 CUPA s and Local Oversight Programs (LOP s) in the State of California. Most are city or county government agencies. As of 1998, all sites or facilities with underground storage tanks were required by Federal mandate to obtain certification by designated UST oversight agencies (in this case, CUPA s) that the UST/s at their location were upgraded or removed in adherence with the 1998 RCRA standards.</p> <p>Information from the FIDS/SWEEPS lists were included in this report search to help identify where underground storage tanks may have existed that were not recorded in CUPA databases or lists collected by us. This may occur if a tank was removed prior to development of recent CUPA UST lists or never registered with a CUPA.</p>			

**Environmental FirstSearch
Site Detail Report**

Target Property: SEGMENT F AND I
LANCASTER CA 93536

JOB: BR RTP-FI

LUST

SEARCH ID: 7 **DIST/DIR:** 0.08 NW **ELEVATION:** 2696 **MAP ID:** 1

NAME: SPACE ORDINANCE SYSTEMS
ADDRESS: 34854 PETERSON RD
CANYON COUNTRY CA 91350
LOS ANGELES
CONTACT:
SOURCE: CA SWRCB

REV: 06/22/10
ID1: T0603704768
ID2:
STATUS: OPEN - SITE ASSESSMENT
PHONE:

RELEASE DATA FROM THE CALIFORNIA STATE WATER RESOURCES CONTROL BOARD LUSTIS DATABASE

Please note that some data previously provided by the State Water Resources Control Board in the LUSTIS database is not currently being provided by the agency in the most recent edition. Incidents that occurred after the year 2000 may not have much information. Field headers with blank information following after should be interpreted as unreported by the agency.

LEAD AGENCY: DEPARTMENT OF TOXIC SUBSTANCES CONTROL
REGIONAL BOARD CASE NUMBER: R-07864
LOCAL AGENCY: LOS ANGELES COUNTY
LOCAL CASE NUMBER: R-07864
RESPONSIBLE PARTY:
ADDRESS OF RESPONSIBLE PARTY:
SITE OPERATOR:
WATER SYSTEM:

CASE TYPE: LUST Cleanup Site
POTENTIAL CONTAMINANTS OF CONCERN: Aviation
POTENTIAL MEDIA AFFECTED: Soil
LEAK CAUSE:
LEAK SOURCE:
HOW LEAK WAS DISCOVERED:
DATE DISCOVERED (blank if not reported):
HOW LEAK WAS STOPPED:
STOP DATE (blank if not reported):
STATUS: Open - Site Assessment
STATUS DATE: 1990-04-10
ABATEMENT METHOD (please note that not all code translations have been provided by the reporting agency):
ENFORCEMENT TYPE (please note that not all code translations have been provided by the reporting agency):
DATE OF ENFORCEMENT (blank if not reported):
SITE HISTORY (blank if not reported):

ACTION TYPE (blank if not reported): Other
DATE (blank if not reported): 1950-01-01
ACTION (blank if not reported): Leak Reported

ACTION TYPE (blank if not reported): Other
DATE (blank if not reported): 1950-01-01
ACTION (blank if not reported): Leak Discovery

ACTION TYPE (blank if not reported): Other
DATE (blank if not reported): 1950-01-01
ACTION (blank if not reported): Leak Stopped

MTBE DATA FROM THE CALIFORNIA STATE WATER RESOURCES CONTROL BOARD LUSTIS DATABASE

MTBE DATE (Date of historical maximum MTBE concentration):
MTBE GROUNDWATER CONCENTRATION (parts per billion):
MTBE SOIL CONCENTRATION (parts per million):
MTBE CNTS:
MTBE FUEL:
MTBE TESTED:
MTBE CLASS:

Environmental FirstSearch **Site Detail Report**

Target Property: SEGMENT F AND I
LANCASTER CA 93536

JOB: BR RTP-FI

NFRAP

SEARCH ID: 1 **DIST/DIR:** 0.08 NW **ELEVATION:** 2696 **MAP ID:** 1

NAME:	SPACE ORDNANCE SYSTEMS MINT CYN	REV:	7/2/10
ADDRESS:	34854 PETERSON RD	ID1:	CAD000819847
	CANYON COUNTRY CA 91351	ID2:	0900951
	LOS ANGELES	STATUS:	NFRAP-N
CONTACT:		PHONE:	
SOURCE:	EPA		

DESCRIPTION:

ACTION/QUALITY	AGENCY/RPS	START/RAA	END
ARCHIVE SITE	EPA In-House		1/23/1996
ARCHIVE SITE	EPA In-House		1/23/1996
ARCHIVE SITE	EPA In-House		
DISCOVERY	EPA Fund-Financed		4/1/1980
DISCOVERY	EPA Fund-Financed		
DISCOVERY	EPA Fund-Financed		4/1/1980
PRELIMINARY ASSESSMENT LOW PRIORITY FOR FURTHER ASSESSMENT	EPA Fund-Financed		4/1/1984
PRELIMINARY ASSESSMENT LOW PRIORITY FOR FURTHER ASSESSMENT	EPA Fund-Financed		4/1/1984
PRELIMINARY ASSESSMENT	EPA Fund-Financed		
SITE INSPECTION	EPA Fund-Financed		
SITE INSPECTION NFRAP: NO FURTHER REMEDIAL ACTION PLANNED	EPA Fund-Financed		4/1/1984
SITE INSPECTION NFRAP: NO FURTHER REMEDIAL ACTION PLANNED	EPA Fund-Financed		4/1/1984

Environmental FirstSearch
Site Detail Report

Target Property: SEGMENT F AND I
LANCASTER CA 93536

JOB: BR RTP-FI

UST

SEARCH ID: 5 **DIST/DIR:** 0.20 SE **ELEVATION:** 2727 **MAP ID:** 2

NAME: PEPPER TREE MARKET
ADDRESS: 9661 W SIERRA HWY
AQUA DULCE CA 91350
LOS ANGELES
CONTACT: TONY MASHOUR
SOURCE: LA COUNTY DPW

REV: 05/02/09
ID1: LACO026878
ID2: THOMAS GUIDE 4373H2
STATUS: NOT REPORTED
PHONE: 6612681839

According to the Los Angeles County Department of Public Works the following information is current as of 05/02/09

GENERAL INFORMATION REGARDING SITE

Tax Accessors Parcel /s: 3213 / 014 / 029
File Number: 037500
File Name: PEPPER TREE MARKET
Property Owner Name and Type: TONY MASHOUR / INDIVIDUAL
Property Owner Address: 9661 SIERRA HWY SAUGUS, CA 91350
Tank Owner Name and Type: TONY MASHOUR / INDIVIDUAL
Tank Owner Address: 9661 SIERRA HWY SAUGUS, CA 91350
Tank Owner Phone: 661/2681839

PERMIT INFORMATION

Permit Number and Category: 000345825 / TANK
Permit Type and Date: UST OPERATING PERMIT / 20020404
Permit Expiration Date: 20090630
Permit Status: PERM
Fee Exempt: No
Penalty Date/s: /
Suspension Date and Reason: /

SPECIFIC TANK INFORMATION FOR TANK NUMBER: 00001

Unique Tank Number: 000039054
Status: Permanent
Installation Date: 20020502
Owner Number: 1
Capacity: 0000012000
Content:
J Fuel Type: REGULAR UNLEADED GASOLINE
CAS Number:
Product or Waste in Tank (?): PRODUCT

SPECIFIC TANK INFORMATION FOR TANK NUMBER: 00002

Unique Tank Number: 000039055
Status: Permanent
Installation Date: 20020502
Owner Number: 2
Capacity: 0000012000
Content:
J Fuel Type: PREMIUM UNLEADED GASOLINE
CAS Number:
Product or Waste in Tank (?): PRODUCT

SPECIFIC TANK INFORMATION FOR TANK NUMBER: 00003

Unique Tank Number: 000039056
Status: Permanent
Installation Date: 20020502
Owner Number: 3
Capacity: 0000012000
Content:
J Fuel Type: DIESEL
CAS Number:

- Continued on next page -

**Environmental FirstSearch
Site Detail Report**

Target Property: SEGMENT F AND I
LANCASTER CA 93536

JOB: BR RTP-FI

UST

SEARCH ID: 5 **DIST/DIR:** 0.20 SE **ELEVATION:** 2727 **MAP ID:** 2

NAME: PEPPER TREE MARKET
ADDRESS: 9661 W SIERRA HWY
AQUA DULCE CA 91350
LOS ANGELES
CONTACT: TONY MASHOUR
SOURCE: LA COUNTY DPW

REV: 05/02/09
ID1: LACO026878
ID2: THOMAS GUIDE 4373H2
STATUS: NOT REPORTED
PHONE: 6612681839

Product or Waste in Tank (?): *PRODUCT*

TANK CLOSING and REMOVAL INFORMATION (if applicable) FOR TANK : 00001

Application Closing Number:
Date Tank Closed:
Last Used Date:
Remaining Quantity: 0000000000
Inert Fill:
Removal Application Number:

TANK CLOSING and REMOVAL INFORMATION (if applicable) FOR TANK : 00002

Application Closing Number:
Date Tank Closed:
Last Used Date:
Remaining Quantity: 0000000000
Inert Fill:
Removal Application Number:

TANK CLOSING and REMOVAL INFORMATION (if applicable) FOR TANK : 00003

Application Closing Number:
Date Tank Closed:
Last Used Date:
Remaining Quantity: 0000000000
Inert Fill:
Removal Application Number:

TANK and PIPING MATERIALS (if applicable) FOR TANK : 00001

Manufacturer: MODERN WELDING
Construction Type Description:
Construction Material Description:
Construction Lining Description:
Piping Type Description:
Piping Construction Description:
Piping Material Description:
Piping Leak Detection Description:
Leak Detection System 1:
Leak Detection System 2:
Last Update: 20070102
Last Operator: E288422

TANK and PIPING MATERIALS (if applicable) FOR TANK : 00002

Manufacturer: MODERN WELDING
Construction Type Description:
Construction Material Description:
Construction Lining Description:
Piping Type Description:
Piping Construction Description:
Piping Material Description:
Piping Leak Detection Description:
Leak Detection System 1:
Leak Detection System 2:
Last Update: 20070102
Last Operator: E288422

- Continued on next page -

**Environmental FirstSearch
Site Detail Report**

Target Property: SEGMENT F AND I
LANCASTER CA 93536

JOB: BR RTP-FI

UST

SEARCH ID: 5 **DIST/DIR:** 0.20 SE **ELEVATION:** 2727 **MAP ID:** 2

NAME: PEPPER TREE MARKET	REV: 05/02/09
ADDRESS: 9661 W SIERRA HWY	ID1: LACO026878
AQUA DULCE CA 91350	ID2: THOMAS GUIDE 4373H2
LOS ANGELES	STATUS: NOT REPORTED
CONTACT: TONY MASHOUR	PHONE: 6612681839
SOURCE: LA COUNTY DPW	

TANK and PIPING MATERIALS (if applicable) FOR TANK : 00003

Manufacturer: MODERN WELDING

Construction Type Description:

Construction Material Description:

Construction Lining Description:

Piping Type Description:

Piping Construction Description:

Piping Material Description:

Piping Leak Detection Description:

Leak Detection System 1:

Leak Detection System 2:

Last Update: 20070102

Last Operator: E288422

Environmental FirstSearch Site Detail Report

Target Property: SEGMENT F AND I
LANCASTER CA 93536

JOB: BR RTP-FI

STATE

SEARCH ID: 4 DIST/DIR: 0.22 NW ELEVATION: 2717 MAP ID: 3

NAME: SOS - MINT CANYON FACILITY
ADDRESS: 34854 PETERSON RD
CANYON COUNTRY CA 91351
LOS ANGELES
CONTACT:
SOURCE: CA DTSC

REV: 08/04/10
ID1: CAL19340736
ID2: STATE RESPONSE
STATUS: CERTIFIED
PHONE:

GENERAL SITE INFORMATION

Site Type:	State Response
Status:	Certified
Status Date:	1993-05-17
NPL Site:	NO
Funding:	Responsible Party
Regulatory Agencies Involved:	DTSC
Lead Agency:	NONE SPECIFIED
Project Manager:	MICHEL ISKAROUS
Supervisor:	* Harlan Jeché
Branch:	Chatsworth
Acres:	0.33
Assessor's Parcel Number:	NONE SPECIFIED
Past Uses:	MANUFACTURING - ELECTRONIC
Potential Contaminants:	Benzene Explosives (UXO, MEC) Freon 113 Tetrachloroethylene (PCE) Trichloroethylene (TCE)
Confirmed Contaminants:	Benzene Explosives (UXO, MEC) Freon 113 Tetrachloroethylene (PCE) Trichloroethylene (TCE)
Potential Media Affected:	SOIL
Restricted Use:	NO
Site Management Required:	NONE SPECIFIED
Special Programs Associated with this Site:	

OTHER SITE NAMES (blank below = not reported by agency)

SPACE ORDNANCE SYSTEMS - MINT CANYON FAC

TRANSTECHNOLOGY CORP / SPACE ORD SYS DIV

CAD000819847

110033615871

CAD000819847

P31044

19340736

COMPLETED ACTIVITIES AND DTSC COMMENTS REGARDING THIS SITE (blank below = not reported by agency)

Area Name:	PROJECT WIDE
Sub-Area Name:	
Document Type:	Consent Order
Completion Date:	1995-01-18 00:00:00
Comments:	The Department enters into a Consent Decree with one of the RPs for the Mint Canyon site.

Area Name:	PROJECT WIDE
Sub-Area Name:	
Document Type:	Consent Order
Completion Date:	1994-04-18 00:00:00
Comments:	

Area Name:	PROJECT WIDE
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- Continued on next page -

Environmental FirstSearch Site Detail Report

Target Property: SEGMENT F AND I
LANCASTER CA 93536

JOB: BR RTP-FI

STATE

SEARCH ID: 4 **DIST/DIR:** 0.22 NW **ELEVATION:** 2717 **MAP ID:** 3

NAME: SOS - MINT CANYON FACILITY
ADDRESS: 34854 PETERSON RD
CANYON COUNTRY CA 91351
LOS ANGELES
CONTACT:
SOURCE: CA DTSC

REV: 08/04/10
ID1: CAL19340736
ID2: STATE RESPONSE
STATUS: CERTIFIED
PHONE:

Sub- Area Name:
Document Type: *Certification*
Completion Date: *1993-05-17 00:00:00*
Comments: *Final remedial action consisted of the excavation of soils and sumps. Excavated materials were transported and dispo disposed of at Class I landfill. Reactive waste excava- ted from the small burn pit was stabilized on-site and then transported out of state for incineration. 108.3 tons of soil was removed.*

Area Name: *PROJECT WIDE*
Sub- Area Name:
Document Type: *Unilateral Order (I/SE, RAO, CAO, EPA AO)*
Completion Date: *1988-07-30 00:00:00*
Comments:

Area Name: *PROJECT WIDE*
Sub- Area Name:
Document Type: *Consent Order*
Completion Date: *1985-11-30 00:00:00*
Comments:

Area Name: *PROJECT WIDE*
Sub- Area Name:
Document Type: *Removal Action Completion Report*
Completion Date: *1989-10-30 00:00:00*
Comments: *Removal Action: Excavation of small burnpit. Approximately 33.7 tons of soil contaminated with VOCs was removed. The area was backfilled with clean imported soil.*

Area Name: *PROJECT WIDE*
Sub- Area Name:
Document Type: *Removal Action Completion Report*
Completion Date: *1991-03-08 00:00:00*
Comments:

Area Name: *PROJECT WIDE*
Sub- Area Name:
Document Type: *Removal Action Completion Report*
Completion Date: *1988-08-30 00:00:00*
Comments: *Removal Action: Onsite sumps and soils removed.*

Area Name: *PROJECT WIDE*
Sub- Area Name:
Document Type: *Remedial Action Plan*
Completion Date: *1987-10-30 00:00:00*
Comments:

Area Name: *PROJECT WIDE*
Sub- Area Name:
Document Type: *Removal Action Completion Report*
Completion Date: *1986-06-30 00:00:00*
Comments: *Removal Action: Activated carbon filtration.*

Area Name: *PROJECT WIDE*
Sub- Area Name:
Document Type: *Remedial Investigation / Feasibility Study*

- Continued on next page -

***Environmental FirstSearch
Site Detail Report***

Target Property: SEGMENT F AND I
 LANCASTER CA 93536

JOB: BRRTP-FI

STATE			
SEARCH ID: 4	DIST/DIR: 0.22 NW	ELEVATION: 2717	MAP ID: 3
NAME: SOS - MINT CANYON FACILITY		REV: 08/04/10	
ADDRESS: 34854 PETERSON RD		ID1: CAL19340736	
CANYON COUNTRY CA 91351		ID2: STATE RESPONSE	
LOS ANGELES		STATUS: CERTIFIED	
CONTACT:		PHONE:	
SOURCE: CA DTSC			
Completion Date:		<i>1984-10-30 00:00:00</i>	
Comments:			

**Environmental FirstSearch
Site Detail Report**

Target Property: SEGMENT F AND I
LANCASTER CA 93536

JOB: BR RTP-FI

LUST

SEARCH ID: 8 **DIST/DIR:** 0.24 NE **ELEVATION:** 1521 **MAP ID:** 4

NAME: LA RETARDED CITIZENS FOUND. ADDRESS: 29880 BOUQUET CANYON RD N SAUGUS CA 91350 LOS ANGELES CONTACT: SOURCE: CA SWRCB	REV: 06/22/10 ID1: T0603704157 ID2: STATUS: COMPLETED - CASE CLOSED PHONE:
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RELEASE DATA FROM THE CALIFORNIA STATE WATER RESOURCES CONTROL BOARD LUSTIS DATABASE

Please note that some data previously provided by the State Water Resources Control Board in the LUSTIS database is not currently being provided by the agency in the most recent edition. Incidents that occurred after the year 2000 may not have much information. Field headers with blank information following after should be interpreted as unreported by the agency.

LEAD AGENCY: LOS ANGELES COUNTY
REGIONAL BOARD CASE NUMBER: I-14344
LOCAL AGENCY: LOS ANGELES COUNTY
LOCAL CASE NUMBER:
RESPONSIBLE PARTY:
ADDRESS OF RESPONSIBLE PARTY:
SITE OPERATOR:
WATER SYSTEM:

CASE TYPE: LUST Cleanup Site
POTENTIAL CONTAMINANTS OF CONCERN: Gasoline
POTENTIAL MEDIA AFFECTED: Soil
LEAK CAUSE:
LEAK SOURCE:
HOW LEAK WAS DISCOVERED:
DATE DISCOVERED (blank if not reported):
HOW LEAK WAS STOPPED:
STOP DATE (blank if not reported):
STATUS: Completed - Case Closed
STATUS DATE: 1992-10-15
ABATEMENT METHOD (please note that not all code translations have been provided by the reporting agency):
ENFORCEMENT TYPE (please note that not all code translations have been provided by the reporting agency):
DATE OF ENFORCEMENT (blank if not reported):
SITE HISTORY (blank if not reported):

ACTION TYPE (blank if not reported): Other
DATE (blank if not reported): 1950-01-01
ACTION (blank if not reported): Leak Reported

ACTION TYPE (blank if not reported): Other
DATE (blank if not reported): 1950-01-01
ACTION (blank if not reported): Leak Discovery

MTBE DATA FROM THE CALIFORNIA STATE WATER RESOURCES CONTROL BOARD LUSTIS DATABASE

MTBE DATE (Date of historical maximum MTBE concentration):
MTBE GROUNDWATER CONCENTRATION (parts per billion):
MTBE SOIL CONCENTRATION (parts per million):
MTBE CNTS:
MTBE FUEL:
MTBE TESTED:
MTBE CLASS:

**Environmental FirstSearch
Site Detail Report**

Target Property: SEGMENT F AND I
LANCASTER CA 93536

JOB: BRRTP-FI

STATE

SEARCH ID: 3 **DIST/DIR:** 0.31 SW **ELEVATION:** 2921 **MAP ID:** 5

NAME: PROPOSED HIGH SCHOOL 10 ADDRESS: ELIZABETH LAKE ROAD AND CHERRY TREE LANE PALMDALE CA 93550 MARIN CONTACT: SOURCE: CA DTSC	REV: 08/04/10 ID1: CAL70000187 ID2: SCHOOL STATUS: INACTIVE - ACTION REQUIRED PHONE:
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GENERAL SITE INFORMATION

Site Type:	<i>School Investigation</i>
Status:	<i>Inactive - Action Required</i>
Status Date:	<i>2007-06-13</i>
NPL Site:	<i>NO</i>
Funding:	<i>School District</i>
Regulatory Agencies Involved:	<i>SMBRP</i>
Lead Agency:	<i>SMBRP</i>
Project Manager:	
Supervisor:	<i>Javier Hinojosa</i>
Branch:	<i>Chatsworth</i>
Acres:	<i>140</i>
Assessor's Parcel Number:	<i>NONE SPECIFIED</i>
Past Uses:	<i>NONE, SCHOOL - HIGH SCHOOL</i>
Potential Contaminants:	<i>NONE SPECIFIED 31000</i>
Confirmed Contaminants:	<i>31000</i>
Potential Media Affected:	<i>SOIL</i>
Restricted Use:	<i>NO</i>
Site Management Required:	<i>NONE SPECIFIED</i>
Special Programs Associated with this Site:	

OTHER SITE NAMES (blank below = not reported by agency)

304521

70000187

COMPLETED ACTIVITIES AND DTSC COMMENTS REGARDING THIS SITE (blank below = not reported by agency)

Area Name:	<i>PROJECT WIDE</i>
Sub-Area Name:	
Document Type:	<i>Environmental Oversight Agreement</i>
Completion Date:	<i>2006-01-18 00:00:00</i>
Comments:	

Area Name:	<i>PROJECT WIDE</i>
Sub-Area Name:	
Document Type:	<i>Agreement Terminated Notification</i>
Completion Date:	<i>2007-06-18 00:00:00</i>
Comments:	<i>Issued EOA termination letter due to inactivity of the site since January 18, 2006.</i>

Area Name:	<i>PROJECT WIDE</i>
Sub-Area Name:	
Document Type:	<i>Cost Recovery Closeout Memo</i>
Completion Date:	<i>2007-07-02 00:00:00</i>
Comments:	<i>Issued CRU Memo</i>

**Environmental FirstSearch
Site Detail Report**

Target Property: SEGMENT F AND I
LANCASTER CA 93536

JOB: BRRTP-FI

SWL

SEARCH ID: 10	DIST/DIR: NON GC	ELEVATION:	MAP ID:
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NAME: 90TH STREET AND AVENUE L - IDS
ADDRESS: 90TH STREET WEST AND AVENUE L
LANCASTER CA
LOS ANGELES

REV: 08/14/03
ID1: SWIS19-AA-5753
ID2:
STATUS: CLOSED
PHONE:

CONTACT:
SOURCE:

Activity: *Solid Waste Disposal Site*
Accepted Waste:
Operational Status: *Clean Closed*
Regulatory Status: *Unpermitted*
Closure Date: *12/31/2002*
Closure Type: *Estimated*
Permitted Throughput with Units:
Permitted Capacity with Units:
Remaining Capacity with Units (landfills only):
Permitted Total Acreage:
Permitted Disposal Acreage:
Last Tire Inspection Count:
Last Tire Inspection Count Date:
Original Tire Inspection Count:
Last Tire Inspection Count Date:
Inspection Frequency: *None*

***Environmental FirstSearch
Site Detail Report***

Target Property: SEGMENT F AND I
 LANCASTER CA 93536

JOB: BR RTP-FI

TRIBALLAND

SEARCH ID: 17	DIST/DIR: NON GC	ELEVATION:	MAP ID:
NAME: BUREAU OF INDIAN AFFAIRS CONTACT INFORMATION		REV: 01/15/08	
ADDRESS: UNKNOWN CA 91390		ID1: BIA-91390	
		ID2:	
CONTACT:		STATUS:	
SOURCE: BIA		PHONE:	
DETAILS NOT AVAILABLE			

Environmental FirstSearch Site Detail Report

Target Property: SEGMENT F AND I
LANCASTER CA 93536

JOB: BR RTP-FI

OTHER

SEARCH ID: 11 **DIST/DIR:** NON GC **ELEVATION:** **MAP ID:**

NAME: PROPOSED ELEMENTARY SCHOOL SITE ADDRESS: AVENUE L-12 AND 82ND STREET WEST LANCASTER CA 93551 LOS ANGELES CONTACT: SOURCE: CA DTSC	REV: 08/04/10 ID1: CAL60000622 ID2: STATUS: NO FURTHER ACTION PHONE:
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GENERAL SITE INFORMATION

Site Type:	<i>School Investigation</i>
Status:	<i>No Further Action</i>
Status Date:	<i>2008-03-18</i>
NPL Site:	<i>NO</i>
Funding:	<i>School District</i>
Regulatory Agencies Involved:	<i>SMBRP</i>
Lead Agency:	<i>SMBRP</i>
Project Manager:	<i>ASLAM SHAREEF</i>
Supervisor:	<i>Shahir Haddad</i>
Branch:	<i>Cypress</i>
Acres:	<i>12.7</i>
Assessor's Parcel Number:	<i>NONE SPECIFIED</i>
Past Uses:	<i>AGRICULTURAL - ORCHARD</i>
Potential Contaminants:	<i>30001 30004 30006 30007 30008</i>
Confirmed Contaminants:	<i>30001 30004 30006 30007 30008</i>
Potential Media Affected:	<i>SOIL</i>
Restricted Use:	<i>NO</i>
Site Management Required:	<i>NONE SPECIFIED</i>
Special Programs Associated with this Site:	

OTHER SITE NAMES (blank below = not reported by agency)

304562

60000622

COMPLETED ACTIVITIES AND DTSC COMMENTS REGARDING THIS SITE (blank below = not reported by agency)

Area Name:	<i>PROJECT WIDE</i>
Sub-Area Name:	
Document Type:	<i>Phase 1</i>
Completion Date:	<i>2007-06-07 00:00:00</i>
Comments:	<i>PEA Required; DTSC determination sent to the district on June 7, 2007</i>
Area Name:	<i>PROJECT WIDE</i>
Sub-Area Name:	
Document Type:	<i>Preliminary Endangerment Assessment Tech Memo</i>
Completion Date:	<i>2007-10-22 00:00:00</i>
Comments:	<i>TM approval sent to the district</i>
Area Name:	<i>PROJECT WIDE</i>
Sub-Area Name:	
Document Type:	<i>Preliminary Endangerment Assessment Report</i>
Completion Date:	<i>2008-03-18 00:00:00</i>
Comments:	<i>PEA Approval processed on March 18, 2008</i>
Area Name:	<i>PROJECT WIDE</i>
Sub-Area Name:	
Document Type:	<i>Environmental Oversight Agreement</i>
Completion Date:	<i>2007-08-28 00:00:00</i>
Comments:	<i>Signed agreement sent (FedEx) to District.</i>

- Continued on next page -

***Environmental FirstSearch
Site Detail Report***

Target Property: SEGMENT F AND I
LANCASTER CA 93536

JOB: BR RTP-FI

OTHER

SEARCH ID: 11	DIST/DIR: NON GC	ELEVATION:	MAP ID:
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NAME: PROPOSED ELEMENTARY SCHOOL SITE
ADDRESS: AVENUE L-12 AND 82ND STREET WEST
LANCASTER CA 93551
LOS ANGELES

REV: 08/04/10
ID1: CAL60000622
ID2:
STATUS: NO FURTHER ACTION
PHONE:

CONTACT:
SOURCE: CA DTSC

Area Name:	PROJECT WIDE
Sub- Area Name:	
Document Type:	<i>Cost Recovery Closeout Memo</i>
Completion Date:	<i>2008-03-19 00:00:00</i>
Comments:	<i>Cost Recovery Closeout Memo.</i>

Environmental FirstSearch

Site Detail Report

Target Property: SEGMENT F AND I
LANCASTER CA 93536

JOB: BR RTP-FI

LUST

SEARCH ID: 12 **DIST/DIR:** NON GC **ELEVATION:** **MAP ID:**

NAME: NORTH FORK **REV:** 06/22/10
ADDRESS: T4N R13-W33 **ID1:** T0603700205
SAUGUS CA 91350 **ID2:**
LOS ANGELES **STATUS:** COMPLETED - CASE CLOSED
CONTACT: **PHONE:**
SOURCE: CA SWRCB

RELEASE DATA FROM THE CALIFORNIA STATE WATER RESOURCES CONTROL BOARD LUSTIS DATABASE

Please note that some data previously provided by the State Water Resources Control Board in the LUSTIS database is not currently being provided by the agency in the most recent edition. Incidents that occurred after the year 2000 may not have much information. Field headers with blank information following after should be interpreted as unreported by the agency.

LEAD AGENCY: LOS ANGELES COUNTY
REGIONAL BOARD CASE NUMBER: 120590-32
LOCAL AGENCY: LOS ANGELES COUNTY
LOCAL CASE NUMBER:
RESPONSIBLE PARTY:
ADDRESS OF RESPONSIBLE PARTY:
SITE OPERATOR:
WATER SYSTEM:

CASE TYPE: LUST Cleanup Site
POTENTIAL CONTAMINANTS OF CONCERN: Gasoline
POTENTIAL MEDIA AFFECTED: Soil
LEAK CAUSE:
LEAK SOURCE:
HOW LEAK WAS DISCOVERED:
DATE DISCOVERED (blank if not reported):
HOW LEAK WAS STOPPED:
STOP DATE (blank if not reported):
STATUS: Completed - Case Closed
STATUS DATE: 1992-04-02
ABATEMENT METHOD (please note that not all code translations have been provided by the reporting agency):
ENFORCEMENT TYPE (please note that not all code translations have been provided by the reporting agency):
DATE OF ENFORCEMENT (blank if not reported):
SITE HISTORY (blank if not reported):

ACTION TYPE (blank if not reported): ENFORCEMENT
DATE (blank if not reported): 1992-04-02
ACTION (blank if not reported): Closure/No Further Action Letter

ACTION TYPE (blank if not reported): Other
DATE (blank if not reported): 1950-01-01
ACTION (blank if not reported): Leak Stopped

ACTION TYPE (blank if not reported): Other
DATE (blank if not reported): 1950-01-01
ACTION (blank if not reported): Leak Reported

ACTION TYPE (blank if not reported): Other
DATE (blank if not reported): 1950-01-01
ACTION (blank if not reported): Leak Discovery

MTBE DATA FROM THE CALIFORNIA STATE WATER RESOURCES CONTROL BOARD LUSTIS DATABASE

MTBE DATE (Date of historical maximum MTBE concentration):
MTBE GROUNDWATER CONCENTRATION (parts per billion):
MTBE SOIL CONCENTRATION (parts per million):
MTBE CNTS:
MTBE FUEL:
MTBE TESTED:

- Continued on next page -

***Environmental FirstSearch
Site Detail Report***

Target Property: SEGMENT F AND I
 LANCASTER CA 93536

JOB: BR RTP-FI

LUST

SEARCH ID: 12	DIST/DIR: NON GC	ELEVATION:	MAP ID:
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NAME: NORTH FORK
ADDRESS: T4N R13-W33
 SAUGUS CA 91350
 LOS ANGELES

REV: 06/22/10
ID1: T0603700205
ID2:
STATUS: COMPLETED - CASE CLOSED
PHONE:

CONTACT:
SOURCE: CA SWRCB

MTBE CLASS:

Environmental FirstSearch Site Detail Report

Target Property: SEGMENT F AND I
LANCASTER CA 93536

JOB: BRRTP-FI

LUST

SEARCH ID: 13 DIST/DIR: NON GC ELEVATION: MAP ID:

NAME: SAN FRANCISQUITO POWER PLANT 1 REV: 06/22/10
ADDRESS: 3700 CLEAR CREEK CANYON RD ID1: T0603705256
SANTA CLARITA CA 91350 ID2:
LOS ANGELES STATUS: COMPLETED - CASE CLOSED
CONTACT: PHONE:
SOURCE: CA SWRCB

RELEASE DATA FROM THE CALIFORNIA STATE WATER RESOURCES CONTROL BOARD LUSTIS DATABASE

Please note that some data previously provided by the State Water Resources Control Board in the LUSTIS database is not currently being provided by the agency in the most recent edition. Incidents that occurred after the year 2000 may not have much information. Field headers with blank information following after should be interpreted as unreported by the agency.

LEAD AGENCY: LOS ANGELES RWQCB (REGION 4)
REGIONAL BOARD CASE NUMBER: R-15614
LOCAL AGENCY: LOS ANGELES COUNTY
LOCAL CASE NUMBER:
RESPONSIBLE PARTY:
ADDRESS OF RESPONSIBLE PARTY:
SITE OPERATOR:
WATER SYSTEM:

CASE TYPE: LUST Cleanup Site
POTENTIAL CONTAMINANTS OF CONCERN: Gasoline
POTENTIAL MEDIA AFFECTED: Aquifer used for drinking water supply
LEAK CAUSE:
LEAK SOURCE:
HOW LEAK WAS DISCOVERED:
DATE DISCOVERED (blank if not reported):
HOW LEAK WAS STOPPED:
STOP DATE (blank if not reported):
STATUS: Completed - Case Closed
STATUS DATE: 1998-02-27
ABATEMENT METHOD (please note that not all code translations have been provided by the reporting agency):
ENFORCEMENT TYPE (please note that not all code translations have been provided by the reporting agency):
DATE OF ENFORCEMENT (blank if not reported):
SITE HISTORY (blank if not reported):

ACTION TYPE (blank if not reported): Other
DATE (blank if not reported): 1950-01-01
ACTION (blank if not reported): Leak Reported

MTBE DATA FROM THE CALIFORNIA STATE WATER RESOURCES CONTROL BOARD LUSTIS DATABASE

MTBE DATE (Date of historical maximum MTBE concentration):
MTBE GROUNDWATER CONCENTRATION (parts per billion):
MTBE SOIL CONCENTRATION (parts per million):
MTBE CNTS:
MTBE FUEL:
MTBE TESTED:
MTBE CLASS:

**Environmental FirstSearch
Site Detail Report**

Target Property: SEGMENT F AND I
LANCASTER CA 93536

JOB: BR RTP-FI

LUST

SEARCH ID: 14 **DIST/DIR:** NON GC **ELEVATION:** **MAP ID:**

NAME: UNION OIL COMPANY/UNOCAL STATION	REV: 06/22/10
ADDRESS: DEL VALLE OIL FIELD	ID1: T0603702728
VALENCIA CA 91350	ID2:
LOS ANGELES	STATUS: OPEN - SITE ASSESSMENT
CONTACT:	PHONE:
SOURCE: CA SWRCB	

RELEASE DATA FROM THE CALIFORNIA STATE WATER RESOURCES CONTROL BOARD LUSTIS DATABASE

Please note that some data previously provided by the State Water Resources Control Board in the LUSTIS database is not currently being provided by the agency in the most recent edition. Incidents that occurred after the year 2000 may not have much information. Field headers with blank information following after should be interpreted as unreported by the agency.

LEAD AGENCY: LOS ANGELES COUNTY
REGIONAL BOARD CASE NUMBER: I-00696
LOCAL AGENCY: LOS ANGELES COUNTY
LOCAL CASE NUMBER:
RESPONSIBLE PARTY:
ADDRESS OF RESPONSIBLE PARTY:
SITE OPERATOR:
WATER SYSTEM:

CASE TYPE: LUST Cleanup Site
POTENTIAL CONTAMINANTS OF CONCERN: Gasoline
POTENTIAL MEDIA AFFECTED: Soil
LEAK CAUSE:
LEAK SOURCE:
HOW LEAK WAS DISCOVERED:
DATE DISCOVERED (blank if not reported):
HOW LEAK WAS STOPPED:
STOP DATE (blank if not reported):
STATUS: Open - Site Assessment
STATUS DATE: 1985-05-01
ABATEMENT METHOD (please note that not all code translations have been provided by the reporting agency):
ENFORCEMENT TYPE (please note that not all code translations have been provided by the reporting agency):
DATE OF ENFORCEMENT (blank if not reported):
SITE HISTORY (blank if not reported):

ACTION TYPE (blank if not reported): Other
DATE (blank if not reported): 1950-01-01
ACTION (blank if not reported): Leak Discovery

ACTION TYPE (blank if not reported): Other
DATE (blank if not reported): 1950-01-01
ACTION (blank if not reported): Leak Reported

MTBE DATA FROM THE CALIFORNIA STATE WATER RESOURCES CONTROL BOARD LUSTIS DATABASE

MTBE DATE (Date of historical maximum MTBE concentration):
MTBE GROUNDWATER CONCENTRATION (parts per billion):
MTBE SOIL CONCENTRATION (parts per million):
MTBE CNTS:
MTBE FUEL:
MTBE TESTED:
MTBE CLASS:

Environmental FirstSearch Site Detail Report

Target Property: SEGMENT F AND I
LANCASTER CA 93536

JOB: BR RTP-FI

LUST

SEARCH ID: 15 DIST/DIR: NON GC ELEVATION: MAP ID:

NAME: USDA FOREST SERVICE NORTH FOL
ADDRESS: T4N-R13W-SEC 33-NW
ACTON CA 91350
LOS ANGELES
CONTACT:
SOURCE: CA SWRCB
REV: 06/22/10
ID1: T0603700106
ID2:
STATUS: COMPLETED - CASE CLOSED
PHONE:

RELEASE DATA FROM THE CALIFORNIA STATE WATER RESOURCES CONTROL BOARD LUSTIS DATABASE

Please note that some data previously provided by the State Water Resources Control Board in the LUSTIS database is not currently being provided by the agency in the most recent edition. Incidents that occurred after the year 2000 may not have much information. Field headers with blank information following after should be interpreted as unreported by the agency.

LEAD AGENCY: LOS ANGELES COUNTY
REGIONAL BOARD CASE NUMBER: 082692-03
LOCAL AGENCY: LOS ANGELES COUNTY
LOCAL CASE NUMBER: 14596-15223
RESPONSIBLE PARTY:
ADDRESS OF RESPONSIBLE PARTY:
SITE OPERATOR:
WATER SYSTEM:

CASE TYPE: LUST Cleanup Site
POTENTIAL CONTAMINANTS OF CONCERN: Gasoline
POTENTIAL MEDIA AFFECTED: Soil
LEAK CAUSE:
LEAK SOURCE:
HOW LEAK WAS DISCOVERED:
DATE DISCOVERED (blank if not reported):
HOW LEAK WAS STOPPED:
STOP DATE (blank if not reported):
STATUS: Completed - Case Closed
STATUS DATE: 1992-04-02
ABATEMENT METHOD (please note that not all code translations have been provided by the reporting agency):
ENFORCEMENT TYPE (please note that not all code translations have been provided by the reporting agency):
DATE OF ENFORCEMENT (blank if not reported):
SITE HISTORY (blank if not reported):

ACTION TYPE (blank if not reported): Other
DATE (blank if not reported): 1950-01-01
ACTION (blank if not reported): Leak Reported

MTBE DATA FROM THE CALIFORNIA STATE WATER RESOURCES CONTROL BOARD LUSTIS DATABASE

MTBE DATE (Date of historical maximum MTBE concentration):
MTBE GROUNDWATER CONCENTRATION (parts per billion):
MTBE SOIL CONCENTRATION (parts per million):
MTBE CNTS:
MTBE FUEL:
MTBE TESTED:
MTBE CLASS:

Environmental FirstSearch
Site Detail Report

Target Property: SEGMENT F AND I
LANCASTER CA 93536

JOB: BRRTP-FI

TRIBALLAND

SEARCH ID: 16 **DIST/DIR:** NON GC **ELEVATION:** **MAP ID:**

NAME:	BUREAU OF INDIAN AFFAIRS CONTACT INFORMATION	REV:	01/15/08
ADDRESS:	UNKNOWN	ID1:	BIA-93536
	CA 93536	ID2:	
	LOS ANGELES	STATUS:	
CONTACT:		PHONE:	
SOURCE:	BIA		

BUREAU OF INDIAN AFFAIRS CONTACT INFORMATION

OFFICE:	Pacific Regional Office
CONTACT:	CLAY GREGORY, REGIONAL DIRECTOR
 ADDRESS:	 2800 Cottage Way
	Sacramento CA 95825
PHONE:	Phone: 916-978-6000
FAX:	Fax: 916-978-6099

The Native American Consultation Database (NACD) is a tool for identifying consultation contacts for Indian tribes, Alaska Native villages and corporations, and Native Hawaiian organizations. The database is not a comprehensive source of information, but it does provide a starting point for the consultation process by identifying tribal leaders and NAGPRA contacts. This database can be accessed online at the following web address
<http://home.nps.gov/nacd/>

Environmental FirstSearch

Site Detail Report

Target Property: SEGMENT F AND I
LANCASTER CA 93536

JOB: BR RTP-FI

STATE

SEARCH ID: 9 **DIST/DIR:** NON GC **ELEVATION:** **MAP ID:**

NAME: PROPOSED ELEMENTARY SCHOOL SITE ADDRESS: AVENUE L-12 AND 82ND STREET WEST LANCASTER CA 93551 LOS ANGELES CONTACT: SOURCE: CA DTSC	REV: 08/04/10 ID1: CAL60000622 ID2: SCHOOL STATUS: NO FURTHER ACTION PHONE:
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GENERAL SITE INFORMATION

Site Type:	School Investigation
Status:	No Further Action
Status Date:	2008-03-18
NPL Site:	NO
Funding:	School District
Regulatory Agencies Involved:	SMBRP
Lead Agency:	SMBRP
Project Manager:	ASLAM SHAREEF
Supervisor:	Shahir Haddad
Branch:	Cypress
Acres:	12.7
Assessor's Parcel Number:	NONE SPECIFIED
Past Uses:	AGRICULTURAL - ORCHARD
Potential Contaminants:	30001 30004 30006 30007 30008
Confirmed Contaminants:	30001 30004 30006 30007 30008
Potential Media Affected:	SOIL
Restricted Use:	NO
Site Management Required:	NONE SPECIFIED
Special Programs Associated with this Site:	

OTHER SITE NAMES (blank below = not reported by agency)

304562

60000622

COMPLETED ACTIVITIES AND DTSC COMMENTS REGARDING THIS SITE (blank below = not reported by agency)

Area Name:	PROJECT WIDE
Sub- Area Name:	
Document Type:	Phase I
Completion Date:	2007-06-07 00:00:00
Comments:	PEA Required; DTSC determination sent to the district on June 7, 2007

Area Name:	PROJECT WIDE
Sub- Area Name:	
Document Type:	Preliminary Endangerment Assessment Tech Memo
Completion Date:	2007-10-22 00:00:00
Comments:	TM approval sent to the district

Area Name:	PROJECT WIDE
Sub- Area Name:	
Document Type:	Preliminary Endangerment Assessment Report
Completion Date:	2008-03-18 00:00:00
Comments:	PEA Approval processed on March 18, 2008

Area Name:	PROJECT WIDE
Sub- Area Name:	
Document Type:	Environmental Oversight Agreement
Completion Date:	2007-08-28 00:00:00
Comments:	Signed agreement sent (FedEx) to District.

- Continued on next page -

***Environmental FirstSearch
Site Detail Report***

Target Property: SEGMENT F AND I
 LANCASTER CA 93536

JOB: BR RTP-FI

STATE			
SEARCH ID: 9	DIST/DIR: NON GC	ELEVATION:	MAP ID:
NAME: PROPOSED ELEMENTARY SCHOOL SITE ADDRESS: AVENUE L-12 AND 82ND STREET WEST LANCASTER CA 93551 LOS ANGELES CONTACT: SOURCE: CA DTSC	REV: 08/04/10 ID1: CAL60000622 ID2: SCHOOL STATUS: NO FURTHER ACTION PHONE:		
Area Name: Sub- Area Name: Document Type: Completion Date: Comments:	PROJECT WIDE <i>Cost Recovery Closeout Memo</i> <i>2008-03-19 00:00:00</i> <i>Cost Recovery Closeout Memo.</i>		

Environmental FirstSearch Descriptions

NPL: EPA NATIONAL PRIORITY LIST - The National Priorities List is a list of the worst hazardous waste sites that have been identified by Superfund. Sites are only put on the list after they have been scored using the Hazard Ranking System (HRS), and have been subjected to public comment. Any site on the NPL is eligible for cleanup using Superfund Trust money.

A Superfund site is any land in the United States that has been contaminated by hazardous waste and identified by the Environmental Protection Agency (EPA) as a candidate for cleanup because it poses a risk to human health and/or the environment.

FINAL - Currently on the Final NPL

PROPOSED - Proposed for NPL

NPL DELISTED: EPA NATIONAL PRIORITY LIST Subset - Database of delisted NPL sites. The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

DELISTED - Deleted from the Final NPL

CERCLIS: EPA COMPREHENSIVE ENVIRONMENTAL RESPONSE COMPENSATION AND LIABILITY INFORMATION SYSTEM (CERCLIS)- CERCLIS is a database of potential and confirmed hazardous waste sites at which the EPA Superfund program has some involvement. It contains sites that are either proposed to be or are on the National Priorities List (NPL) as well as sites that are in the screening and assessment phase for possible inclusion on the NPL.

PART OF NPL- Site is part of NPL site

DELETED - Deleted from the Final NPL

FINAL - Currently on the Final NPL

NOT PROPOSED - Not on the NPL

NOT VALID - Not Valid Site or Incident

PROPOSED - Proposed for NPL

REMOVED - Removed from Proposed NPL

SCAN PLAN - Pre-proposal Site

WITHDRAWN - Withdrawn

NFRAP: EPA COMPREHENSIVE ENVIRONMENTAL RESPONSE COMPENSATION AND LIABILITY INFORMATION SYSTEM ARCHIVED SITES - database of Archive designated CERCLA sites that, to the best of EPA's knowledge, assessment has been completed and has determined no further steps will be taken to list this site on the National Priorities List (NPL). This decision does not necessarily mean that there is no hazard associated with a given site; it only means that, based upon available information, the location is not judged to be a potential NPL site.

NFRAP - No Further Remedial Action Plan

P - Site is part of NPL site

D - Deleted from the Final NPL

F - Currently on the Final NPL

N - Not on the NPL

O - Not Valid Site or Incident

P - Proposed for NPL

R - Removed from Proposed NPL

S - Pre-proposal Site

W - Withdrawn

RCRA COR ACT: EPA RESOURCE CONSERVATION AND RECOVERY INFORMATION SYSTEM SITES - Database of hazardous waste information contained in the Resource Conservation and Recovery Act Information (RCRAInfo), a national program management and inventory system about hazardous waste handlers. In general, all generators, transporters, treaters, storers, and disposers of hazardous waste are required to provide information about their activities to state environmental agencies. These agencies, in turn pass on the information to regional and national EPA offices. This regulation is governed by the Resource Conservation and Recovery Act (RCRA), as amended by the Hazardous and Solid Waste Amendments of 1984. RCRAInfo facilities that have reported violations and subject to corrective actions.

RCRA TSD: EPA RESOURCE CONSERVATION AND RECOVERY INFORMATION SYSTEM TREATMENT, STORAGE, and DISPOSAL FACILITIES. - Database of hazardous waste information contained in the Resource Conservation and Recovery Act Information (RCRAInfo), a national program management and inventory system about hazardous waste handlers. In general, all generators, transporters, treaters, storers, and disposers of hazardous waste are required to provide information about their activities to state environmental agencies. These agencies, in turn pass on the information to regional and national EPA offices. This regulation is governed by the Resource Conservation and Recovery Act (RCRA), as amended by the Hazardous and Solid Waste Amendments of 1984.

Facilities that treat, store, dispose, or incinerate hazardous waste.

RCRA GEN: EPA/MA DEP/CT DEP RESOURCE CONSERVATION AND RECOVERY INFORMATION SYSTEM GENERATORS - Database of hazardous waste information contained in the Resource Conservation and Recovery Act Information (RCRAInfo), a national program management and inventory system about hazardous waste handlers. In general, all generators, transporters, treaters, storers, and disposers of hazardous waste are required to provide information about their activities to state environmental agencies. These agencies, in turn pass on the information to regional and national EPA offices. This regulation is governed by the Resource Conservation and Recovery Act (RCRA), as amended by the Hazardous and Solid Waste Amendments of 1984.

Facilities that generate or transport hazardous waste or meet other RCRA requirements.

LGN - Large Quantity Generators

SGN - Small Quantity Generators

VGN - Conditionally Exempt Generator.

Included are RAATS (RCRA Administrative Action Tracking System) and CMEL (Compliance Monitoring & Enforcement List) facilities.

CONNECTICUT HAZARDOUS WASTE MANIFEST - Database of all shipments of hazardous waste within, into or from Connecticut. The data includes date of shipment, transporter and TSD info, and material shipped and quantity. This data is appended to the details of existing generator records.

MASSACHUSETTS HAZARDOUS WASTE GENERATOR - database of generators that are regulated under the MA DEP.

VQN-MA = generates less than 220 pounds or 27 gallons per month of hazardous waste or waste oil.

SQN-MA = generates 220 to 2,200 pounds or 27 to 270 gallons per month of waste oil.

LQG-MA = generates greater than 2,200 lbs of hazardous waste or waste oil per month.

RCRA NLR: EPA RESOURCE CONSERVATION AND RECOVERY INFORMATION SYSTEM SITES - Database of hazardous waste information contained in the Resource Conservation and Recovery Act Information (RCRAInfo), a national program management and inventory system about hazardous waste handlers. In general, all generators, transporters, treaters, storers, and disposers of hazardous waste are required to provide information about their activities to state environmental agencies. These agencies, in turn pass on the information to regional and national EPA offices. This regulation is governed by the Resource Conservation and Recovery Act (RCRA), as amended by the Hazardous and Solid Waste Amendments of 1984.

Facilities not currently classified by the EPA but are still included in the RCRAInfo database. Reasons for non classification:

Failure to report in a timely matter.

No longer in business.

No longer in business at the listed address.

No longer generating hazardous waste materials in quantities which require reporting.

ERNS: EPA/NRC EMERGENCY RESPONSE NOTIFICATION SYSTEM (ERNS) - Database of incidents reported to the National Response Center. These incidents include chemical spills, accidents involving chemicals (such as fires or explosions), oil spills, transportation accidents that involve oil or chemicals, releases of radioactive materials, sightings of oil sheens on bodies of water, terrorist incidents involving chemicals, incidents where illegally dumped chemicals have been found, and drills intended to prepare responders to handle these kinds of incidents. Data since January 2001 has been received from the National Response System database as the EPA no longer maintains this data.

Tribal Lands: DOI/BIA INDIAN LANDS OF THE UNITED STATES - Database of areas with boundaries established by treaty, statute, and (or) executive or court order, recognized by the Federal Government as territory in which American Indian tribes have primary governmental authority. The Indian Lands of the United States map layer shows areas of 640 acres or more, administered by the Bureau of Indian Affairs. Included are

Federally-administered lands within a reservation which may or may not be considered part of the reservation.
BUREAU OF INDIAN AFFAIRS CONTACT - Regional contact information for the Bureau of Indian Affairs offices.

State/Tribal Sites: *CA EPA* SMBRPD / CAL SITES- The California Department of Toxic Substances Control (DTSC) has developed an electronic database system called Envirostor with information about sites that are known to be contaminated with hazardous substances as well as information on uncharacterized properties where further studies may reveal problems. The Site Mitigation and Brownfields Reuse Program Database (SMBRPD), formerly known as CalSites, is used primarily by DTSC's staff as an informational tool to evaluate and track activities at properties that may have been affected by the release of hazardous substances. The SMBRPD displays information in six categories, two of which are found in ST. The categories listed under ST are:

1. State Response Sites.
2. School Property Evaluation Program Properties (SCH)

Please Note: Our reports list the above sites as DB Type (STATE). Other categories found in the SMBRPD are listed in our reports in the DB Types OT and VC.

Each Category contains information on properties based upon the type of work taking place at the site. State Response Sites contains only known and potential hazardous substance release sites considered as posing the greatest threat to the public. School sites included in ST will be found within the SMBRPD's School Property Evaluation Program.

CORTESE LIST-Pursuant to Government Code Section 65962.5, the Hazardous Waste and Substances Sites List has been compiled by Cal/EPA, Hazardous Materials Data Management Program to provide information about the location of hazardous materials release sites. Cortese List sites that fall under DTSC's guidelines for State Response sites are included in our reports in the ST category as are qualifying sites from the Annual Work Plan (formerly Bond Expenditure Plan) and the historic ASPIS databases.

State Spills 90: *CA EPA* SLIC REGIONS 1 - 9- The California Regional Water Quality Control Boards maintain report of sites that have records of spills, leaks, investigation, and cleanups.

State/Tribal SWL: *CA IWMB/SWRCB/COUNTY* SWIS SOLID WASTE INFORMATION SYSTEM-The California Integrated Waste Management Board maintains a database on solid waste facilities, operations, and disposal sites throughout the state of California. The types of facilities found in this database include landfills, transfer stations, material recovery facilities, composting sites, transformation facilities, waste tire sites, and closed disposal sites. For more information on individual sites call the number listed in the source field.

Please Note: This database contains poor site location information for many sites in our reports; therefore, it may not be possible to locate or plot some sites in our reports.

WMUDS-The State Water Resources Control Board maintained the Waste Management Unit Database System (WMUDS). It is no longer updated. It tracked management units for several regulatory programs related to waste management and its potential impact on groundwater. Two of these programs (SWAT & TPCA) are no longer on-going regulatory programs as described below. Chapter 15 (SC15) is still an on-going regulatory program and information is updated periodically but not to the WMUDS database. The WMUDS System contains information from the following agency databases: Facility, Waste Management Unit (WMU), Waste Discharger System (WDS), SWAT, Chapter 15, TPCA, RCRA, Inspections, Violations, and Enforcement's.

Note: This database contains poor site location information for many sites in our reports; therefore, it may not be possible to locate or plot some sites in reports.

ORANGE COUNTY LANDFILLS LIST- A list maintained by the Orange County Health Department.

State/Tribal LUST: *CA SWRCB/COUNTY* LUSTIS- The State Water Resources Control Board maintains a database of sites with confirmed or unconfirmed leaking underground storage tanks. Information for this database is collected from the states regional boards quarterly and integrated with this database.

SAN DIEGO COUNTY LEAKING TANKS- The San Diego County Department of Environmental Health maintains a database of sites with confirmed or unconfirmed leaking underground storage tanks within its HE17/58 database. For more information on a specific file call the HazMat Duty Specialist at phone number listed in the source information field.

State/Tribal UST/AST: *CA EPA/COUNTY/CITY* ABOVEGROUND STORAGE TANKS LISTING-The Above Ground Petroleum Storage Act became State Law effective January 1, 1990. In general, the law requires owners or operators of AST's with petroleum products to file a storage statement and pay a fee by July 1, 1990 and every two years thereafter, take specific action to prevent spills, and in certain instances implement a groundwater monitoring program. This law does not apply to that portion of a tank facility associated with the

production oil and regulated by the State Division of Oil and Gas of the Dept. of Conservation.

SWEEPS / FIDS STATE REGISTERED UNDERGROUND STORAGE TANKS- Until 1994 the State Water Resources Control Board maintained a database of registered underground storage tanks statewide referred to as the SWEEPS System. The SWEEPS UST information was integrated with the CAL EPA's Facility Index System database (FIDS) which is a master index of information from numerous California agency environmental databases. That was last updated in 1994. We have included the UST information from the FIDS database in our reports for historical purposes to help our clients identify where tanks may possibly have existed. For more information on specific sites from individual paper files archived at the State Water Resources Control Board call the number listed with the source information.

INDIAN LANDS UNDERGROUND STORAGE TANKS LIST- A listing of underground storage tanks currently on Indian Lands under federal jurisdiction. California Indian Land USTS are administered by US EPA Region 9.

CUPA DATABASES & SOURCES- Definition of a CUPA: A Certified Unified Program Agency (CUPA) is a local agency that has been certified by the CAL EPA to implement six state environmental programs within the local agency's jurisdiction. These can be a county, city, or JPA (Joint Powers Authority). This program was established under the amendments to the California Health and Safety Code made by SB 1082 in 1994.

A Participating Agency (PA) is a local agency that has been designated by the local CUPA to administer one or more Unified Programs within their jurisdiction on behalf of the CUPA. A Designated Agency (DA) is an agency that has not been certified by the CUPA but is the responsible local agency that would implement the six unified programs until they are certified.

Please Note: We collect and maintains information regarding Underground Storage Tanks from the majority of the CUPAS and Participating Agencies in the State of California. These agencies typically do not maintain nor release such information on a uniform or consistent schedule; therefore, currency of the data may vary. Please look at the details on a specific site with a UST record in the First Search Report to determine the actual currency date of the record as provided by the relevant agency. Numerous efforts are made on a regular basis to obtain updated records.

State/Tribal IC: CA EPA DEED-RESTRICTED SITES LISTING- The California EPA's Department of Toxic Substances Control Board maintains a list of deed-restricted sites, properties where the DTSC has placed limits or requirements on the future use of the property due to varying levels of cleanup possible, practical or necessary at the site.

State/Tribal VCP: CA EPA SMBRPD / CAL SITES- The California Department of Toxic Substances Control (DTSC) has developed an electronic database system called Envirostor with information about sites that are known to be contaminated with hazardous substances as well as information on uncharacterized properties where further studies may reveal problems. The Site Mitigation and Brownfields Reuse Program Database (SMBRPD), formerly known as CalSites, is used primarily by DTSC's staff as an informational tool to evaluate and track activities at properties that may have been affected by the release of hazardous substances. The Voluntary Cleanup Program (VCP) category contains only those properties undergoing voluntary investigation and/or cleanup and which are listed in the Voluntary Cleanup Program.

Please Note: Our reports list the above sites as DB Type VC.

RADON: NTIS NATIONAL RADON DATABASE - EPA radon data from 1990-1991 national radon project collected for a variety of zip codes across the United States.

State Permits: CA EPA/COUNTY SAN DIEGO COUNTY HE17 PERMITS- The HE17/58 database tracks establishments issued permits and the status of their permits in relation to compliance with federal, state, and local regulations that the County oversees. It tracks if a site is a hazardous waste generator, TSD, gas station, has underground tanks, violations, or unauthorized releases. For more information on a specific file call the HazMat Duty Specialist at the phone number listed in the source information field.

SAN BERNARDINO COUNTY HAZARDOUS MATERIALS PERMITS- Handlers and Generators Permit Information Maintained by the Hazardous Materials Division.

State Other: CA EPA/COUNTY SMBRPD / CAL SITES- The California Department of Toxic Substances Control (DTSC) has developed an electronic database system called Envirostor with information about sites that are known to be contaminated with hazardous substances as well as information on uncharacterized properties where further studies may reveal problems. The Site Mitigation and Brownfields Reuse Program Database (SMBRPD), formerly known as CalSites, is used primarily by DTSC's staff as an informational tool to evaluate and track activities at properties that may have been affected by the release of hazardous substances.

The SMBRPD displays information in six categories, two of which are found in ST. The categories listed under

OT are:

1. Unconfirmed Properties Referred to Another Local or State Agency (REF)

2. Properties where a No Further Action Determination has been made (NFA)

Please Note: Our reports list the above sites as DB Type (OTHER). Other categories found in the SMBRPD are listed in our reports in the DB Types ST and VC.

LA COUNTY SITE MITIGATION COMPLAINT CONTROL LOG- The County of Los Angeles Public Health Investigation Compliant Control Log.

ORANGE COUNTY INDUSTRIAL SITE CLEANUPS- List maintained by the Orange County Environmental Health Agency.

RIVERSIDE COUNTY WASTE GENERATORS-A list of facilities in Riverside County which generate hazardous waste.

SACRAMENTO COUNTY MASTER HAZMAT LIST-Master list of facilities within Sacramento County with potentially hazardous materials.

SACRAMENTO COUNTY TOXIC SITE CLEANUPS-A list of sites where unauthorized releases of potentially hazardous materials have occurred.

HW Manifest: *CA EPA* DEPARTMENT OF TOXIC SUBSTANCES CONTROL HAZARDOUS WASTE MANIFEST INVENTORY-Records maintained by the CA DTSC of Hazardous Waste Manifests used to track and document the transport of hazardous waste from a generator's site to the site of its final disposition.

Environmental FirstSearch Database Sources

NPL: EPA Environmental Protection Agency

Updated quarterly

NPL DELISTED: EPA Environmental Protection Agency

Updated quarterly

CERCLIS: EPA Environmental Protection Agency

Updated quarterly

NFRAP: EPA Environmental Protection Agency.

Updated quarterly

RCRA COR ACT: EPA Environmental Protection Agency.

Updated quarterly

RCRA TSD: EPA Environmental Protection Agency.

Updated quarterly

RCRA GEN: EPAMA DEP/CT DEP Environmental Protection Agency, Massachusetts Department of Environmental Protection, Connecticut Department of Environmental Protection

Updated quarterly

RCRA NLR: EPA Environmental Protection Agency

Updated quarterly

ERNS: EPA/NRC Environmental Protection Agency

Updated annually

Tribal Lands: DOI/BIA United States Department of the Interior

Updated annually

State/Tribal Sites: CA EPA The CAL EPA, Depart. Of Toxic Substances Control
Phone: (916) 323-3400

Updated quarterly/when available

State Spills 90: CA EPA The California State Water Resources Control Board

Updated when available

State/Tribal SWL: CA IWMB/SWRCB/COUNTY The California Integrated Waste Management Board

Phone:(916) 255-2331

The State Water Resources Control Board

Phone:(916) 227-4365

Orange County Health Department

Updated quarterly/when available

State/Tribal LUST: CA SWRCB/COUNTY The California State Water Resources Control Board

Phone:(916) 227-4416

San Diego County Department of Environmental Health

Updated quarterly/when available

State/Tribal UST/AST: CA EPA/COUNTY/CITY The State Water Resources Control Board

Phone:(916) 227-4364

CAL EPA Department of Toxic Substances Control

Phone:(916)227-4404

US EPA Region 9 Underground Storage Tank Program

Phone: (415) 972-3372

ALAMEDA COUNTY CUPAS:

- * County of Alameda Department of Environmental Health

- * Cities of Berkeley, Fremont, Hayward, Livermore / Pleasanton, Newark, Oakland, San Leandro, Union

ALPINE COUNTY CUPA:

- * Health Department (Only updated by agency sporadically)

AMADOR COUNTY CUPA:

- * County of Amador Environmental Health Department

BUTTE COUNTY CUPA

- * County of Butte Environmental Health Division (Only updated by agency biannually)

CALAVERAS COUNTY CUPA:

- * County of Calaveras Environmental Health Department

COLUSA COUNTY CUPA:

- * Environmental Health Dept.

CONTRA COSTA COUNTY CUPA:

- * Hazardous Materials Program

DEL NORTE COUNTY CUPA:

- * Department of Health and Social Services

EL DORADO COUNTY CUPAS:

- * County of El Dorado Environmental Health - Solid Waste Div (Only updated by agency annually)

- * County of El Dorado EMD Tahoe Division (Only updated by agency annually)

FRESNO COUNTY CUPA:

- * Haz. Mat and Solid Waste Programs

GLENN COUNTY CUPA:

- * Air Pollution Control District

HUMBOLDT COUNTY CUPA:

- * Environmental Health Division

IMPERIAL COUNTY CUPA:

- * Department of Planning and Building

INYO COUNTY CUPA:

- * Environmental Health Department

KERN COUNTY CUPA:

- * County of Kern Environmental Health Department
- * City of Bakersfield Fire Department

KINGS COUNTY CUPA:

- * Environmental Health Services

LAKE COUNTY CUPA:

- * Division of Environmental Health

LASSEN COUNTY CUPA:

- * Department of Agriculture

LOS ANGELES COUNTY CUPAS:

- * County of Los Angeles Fire Department CUPA Data as maintained by the Los Angeles County Department of Public Works
- * County of Los Angeles Environmental Programs Division
- * Cities of Burbank, El Segundo, Glendale, Long Beach/Signal Hill, Los Angeles, Pasadena, Santa Fe Springs, Santa Monica, Torrance, Vernon

MADERA COUNTY CUPA:

- * Environmental Health Department

MARIN COUNTY CUPA:

- * County of Marin Office of Waste Management
- * City of San Rafael Fire Department

MARIPOSA COUNTY CUPA:

- * Health Department

MENDOCINO COUNTY CUPA:

- * Environmental Health Department

MERCED COUNTY CUPA:

- * Division of Environmental Health

MODOC COUNTY CUPA:

- * Department of Agriculture

MONO COUNTY CUPA:

- * Health Department

MONTEREY COUNTY CUPA:

- * Environmental Health Division

NAPA COUNTY CUPA:

- * Hazardous Materials Section

NEVADA COUNTY CUPA:

- * Environmental Health Department

ORANGE COUNTY CUPAS:

- * County of Orange Environmental Health Department
- * Cities of Anaheim, Fullerton, Orange, Santa Ana
- * County of Orange Environmental Health Department

PLACER COUNTY CUPAS:

- * County of Placer Division of Environmental Health Field Office
- * Tahoe City
- * City of Roseville Roseville Fire Department

PLUMAS COUNTY CUPA:

- * Environmental Health Department

RIVERSIDE COUNTY CUPA:

- * Environmental Health Department

SACRAMENTO COUNTY CUPA:

- * County Environmental Mgmt Dept, Haz. Mat. Div.

SAN BENITO COUNTY CUPA:

- * City of Hollister Environmental Service Department

SAN BERNARDINO COUNTY CUPAS:

- * County of San Bernardino Fire Department, Haz. Mat. Div.
- * City of Hesperia Hesperia Fire Prevention Department
- * City of Victorville Victorville Fire Department

SAN DIEGO COUNTY CUPA:

- * The San Diego County Dept. of Environmental Health HE 17/58

SAN FRANCISCO COUNTY CUPA:

- * Department of Public Health

SAN JOAQUIN COUNTY CUPA:

- * Environmental Health Division

SAN LUIS OBISPO COUNTY CUPAS:

- * County of San Luis Obispo Environmental Health Division
- * City of San Luis Obispo City Fire Department

SAN MATEO COUNTY CUPA:

- * Environmental Health Department

SANTA BARBARA COUNTY CUPA:

- * County Fire Dept Protective Services Division

SANTA CLARA COUNTY CUPAS:

- * County of Santa Clara Hazardous Materials Compliance Division
- * Santa Clara County Central Fire Protection District (Covers Campbell, Cupertino, Los Gatos, & Morgan Hill)
- * Cities of Gilroy, Milpitas, Mountain View, Palo Alto, San Jose Fire, Santa Clara, Sunnyvale

SANTA CRUZ COUNTY CUPA:

- * Environmental Health Department

SHASTA COUNTY CUPA:

- * Environmental Health Department

SIERRA COUNTY CUPA:

- * Health Department

SISKIYOU COUNTY CUPA:

- * Environmental Health Department

SONOMA COUNTY CUPAS:

- * County of Sonoma Department Of Environmental Health
- * Cities of Healdsburg / Sebastopol, Petaluma, Santa Rosa

STANISLAUS COUNTY CUPA:

- * Department of Environmental Resources Haz. Mat. Division

SUTTER COUNTY CUPA:

- * Department of Agriculture

TEHAMA COUNTY CUPA:

- * Department of Environmental Health

TRINITY COUNTY CUPA:

- * Department of Health

TULARE COUNTY CUPA:

- * Environmental Health Department

TUOLUMNE COUNTY CUPA:

- * Environmental Health

VENTURA COUNTY CUPAS:

- * County of Ventura Environmental Health Division
- * Cities of Oxnard, Ventura

YOLO COUNTY CUPA:

- * Environmental Health Department

YUBA COUNTY CUPA:

Updated quarterly/annually/when available

State/Tribal IC: CA EPA The California EPA Department of Toxic Substances Control.

Updated Updated quarterly/annually/when available

State/Tribal VCP: CA EPA The California EPA Department of Toxic Substances Control.

Updated Updated quarterly/annually/when available

RADON: NTIS Environmental Protection Agency, National Technical Information Services

Updated periodically

State Permits: CA EPA/COUNTY The San Diego County Depart. Of Environmental Health
Phone:(619) 338-2211
San Bernardino County Fire Department

Updated quarterly/when available

State Other: CA EPA/COUNTY The CAL EPA, Depart. Of Toxic Substances Control
Phone: (916) 323-3400
The Los Angeles County Hazardous Materials Division
Phone: (323) 890-7806
Orange County Environmental Health Agency
Phone: (714) 834-3536
Riverside County Department of Environmental Health, Hazardous Materials Management Division
Phone:(951) 358-5055
Sacramento County Environmental Management Department

Updated quarterly/when available

HW Manifest: CA EPA
CAL EPA, Department of Toxic Substances Control

Updated annually/when available

TRACK ► INFO SERVICES, LLC

Environmental FirstSearch™ Report

Target Property:

SEGMENT G

LANCASTER CA 93536

Job Number: BR RTP-G

PREPARED FOR:

Power Engineers, Inc.

731 E Ball Road Suite 100

Anaheim, CA 92805

(949) 280-7922

09-21-10



Tel: (866) 664-9981

Fax: (818) 249-4227

***Environmental FirstSearch
Site Information Report***

Request Date: 09-21-10
Requestor Name: Roya Compani
Standard: ASTM-05

Search Type: LINEAR
27.45 mile(s)
Job Number: BR RTP-G
Filtered Report

Target Site: SEGMENT G
LANCASTER CA 93536

Demographics

Sites: 6	Non-Geocoded: 2	Population: NA
Radon: 0.6 PCI/L		

Site Location

	<u>Degrees (Decimal)</u>	<u>Degrees (Min/Sec)</u>		<u>UTMs</u>
Longitude:	-118.431297	-118:25:53	Easting:	368765.602
Latitude:	34.608964	34:36:32	Northing:	3830414.805
Elevation:	N/A		Zone:	11

Comment

Comment:

Additional Requests/Services

Adjacent ZIP Codes: 1 Mile(s)

Services:

ZIP Code	City Name	ST	Dist/Dir	Sel
91384	CASTAIC	CA	0.20 NW	Y
91390	SANTA CLARITA	CA	0.00 --	Y
93532	LAKE HUGHES	CA	0.00 --	Y
93551	PALMDALE	CA	0.00 --	Y

	Requested?	Date
Fire Insurance Maps	No	
Aerial Photographs	No	
Historical Topos	No	
City Directories	No	
Title Search/Env Liens	No	
Municipal Reports	No	
Online Topos	No	

Environmental FirstSearch Search Summary Report

Target Site: SEGMENT G
LANCASTER CA 93536

FirstSearch Summary

Database	Sel	Updated	Radius	Site	1/8	1/4	1/2	1/2>	ZIP	TOTALS
NPL	Y	08-01-10	1.00	0	0	0	0	0	0	0
NPL Delisted	Y	08-02-10	0.50	0	0	0	0	-	0	0
CERCLIS	Y	07-02-10	0.50	0	0	0	0	-	0	0
NFRAP	Y	07-02-10	0.50	0	0	0	0	-	0	0
RCRA COR ACT	Y	07-14-10	1.00	0	0	0	0	0	0	0
RCRA TSD	Y	07-14-10	0.50	0	0	0	0	-	0	0
RCRA GEN	Y	07-14-10	0.25	0	0	0	-	-	0	0
RCRA NLR	Y	07-14-10	0.12	0	0	-	-	-	0	0
Federal Brownfield	Y	07-06-10	0.25	0	0	0	-	-	0	0
ERNS	Y	07-23-10	0.12	0	0	-	-	-	0	0
Tribal Lands	Y	12-01-05	1.00	0	0	0	0	0	2	2
State/Tribal Sites	Y	08-04-10	1.00	0	0	0	0	0	0	0
State Spills 90	Y	06-22-10	0.12	0	0	-	-	-	0	0
State/Tribal SWL	Y	06-21-10	0.50	0	0	0	0	-	0	0
State/Tribal LUST	Y	06-22-10	0.50	0	1	0	0	-	0	1
State/Tribal UST/AST	Y	03-10-10	0.25	0	1	1	-	-	0	2
State/Tribal EC	Y	NA	0.25	0	0	0	-	-	0	0
State/Tribal IC	Y	08-04-10	0.25	0	0	0	-	-	0	0
State/Tribal VCP	Y	08-04-10	0.50	0	0	0	0	-	0	0
State/Tribal Brownfields	Y	NA	0.50	0	0	0	0	-	0	0
State Permits	Y	06-22-10	0.12	0	0	-	-	-	0	0
State Other	Y	08-04-10	0.25	0	0	0	-	-	0	0
Federal IC/EC	Y	08-26-10	0.50	0	0	0	0	-	0	0
HW Manifest	Y	08-02-10	0.12	0	1	-	-	-	0	1
- TOTALS -				0	3	1	0	0	2	6

Notice of Disclaimer

Due to the limitations, constraints, inaccuracies and incompleteness of government information and computer mapping data currently available to TRACK Info Services, certain conventions have been utilized in preparing the locations of all federal, state and local agency sites residing in TRACK Info Services's databases. All EPA NPL and state landfill sites are depicted by a rectangle approximating their location and size. The boundaries of the rectangles represent the eastern and western most longitudes; the northern and southern most latitudes. As such, the mapped areas may exceed the actual areas and do not represent the actual boundaries of these properties. All other sites are depicted by a point representing their approximate address location and make no attempt to represent the actual areas of the associated property. Actual boundaries and locations of individual properties can be found in the files residing at the agency responsible for such information.

Waiver of Liability

Although TRACK Info Services uses its best efforts to research the actual location of each site, TRACK Info Services does not and can not warrant the accuracy of these sites with regard to exact location and size. All authorized users of TRACK Info Services's services proceeding are signifying an understanding of TRACK Info Services's searching and mapping conventions, and agree to waive any and all liability claims associated with search and map results showing incomplete and or inaccurate site locations.

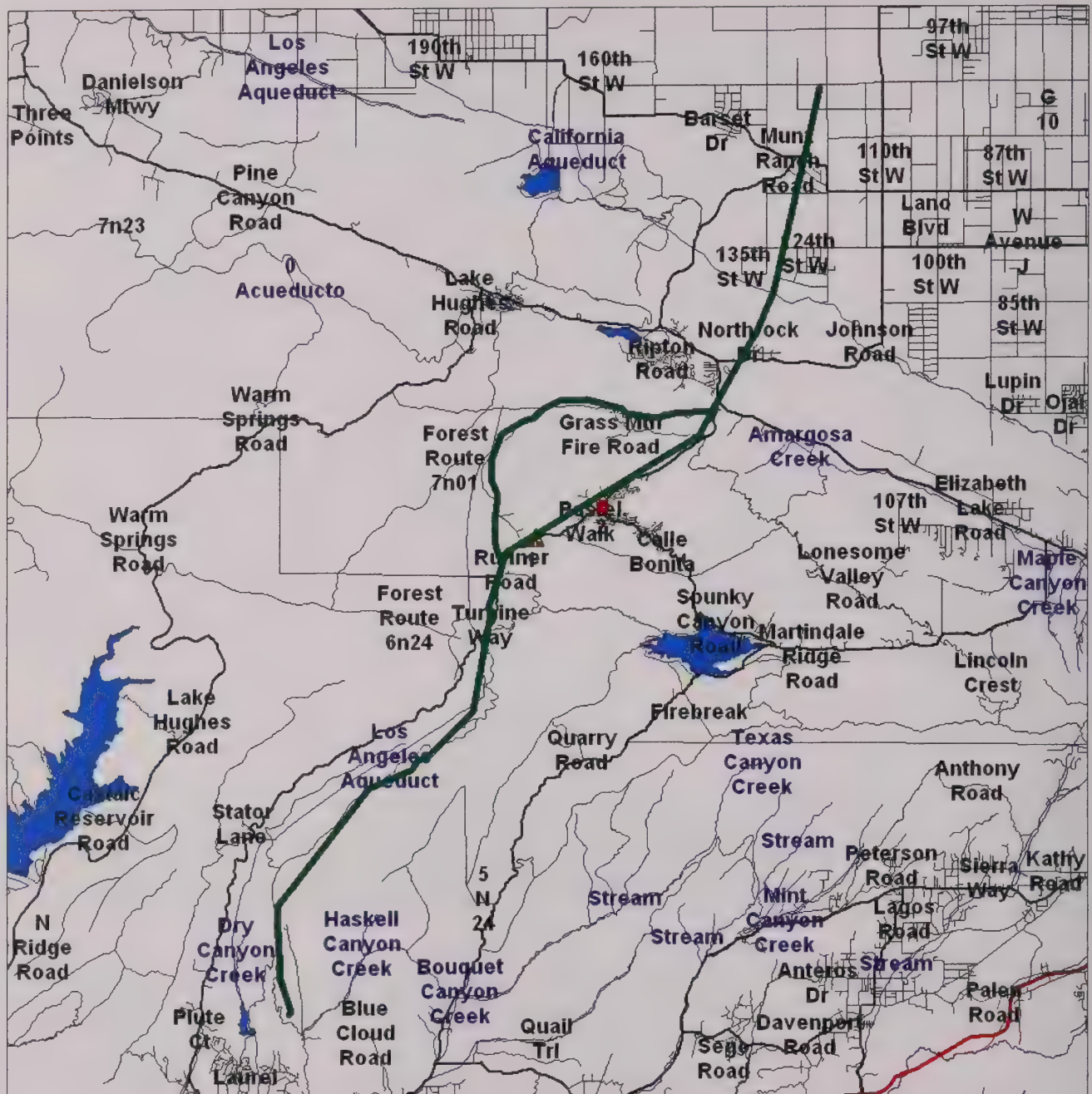


Environmental FirstSearch

1 Mile Radius from Line
Single Map:



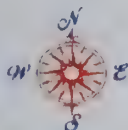
SEGMENT G , LANCASTER CA 93536



Source: U.S. Census TIGER Files

Linear Search Line
Identified Site, Multiple Sites, Receptor
NPL, DELNPL, Brownfield, Solid Waste Landfill (SWL), Hazardous Waste
Triballand.....
Railroads



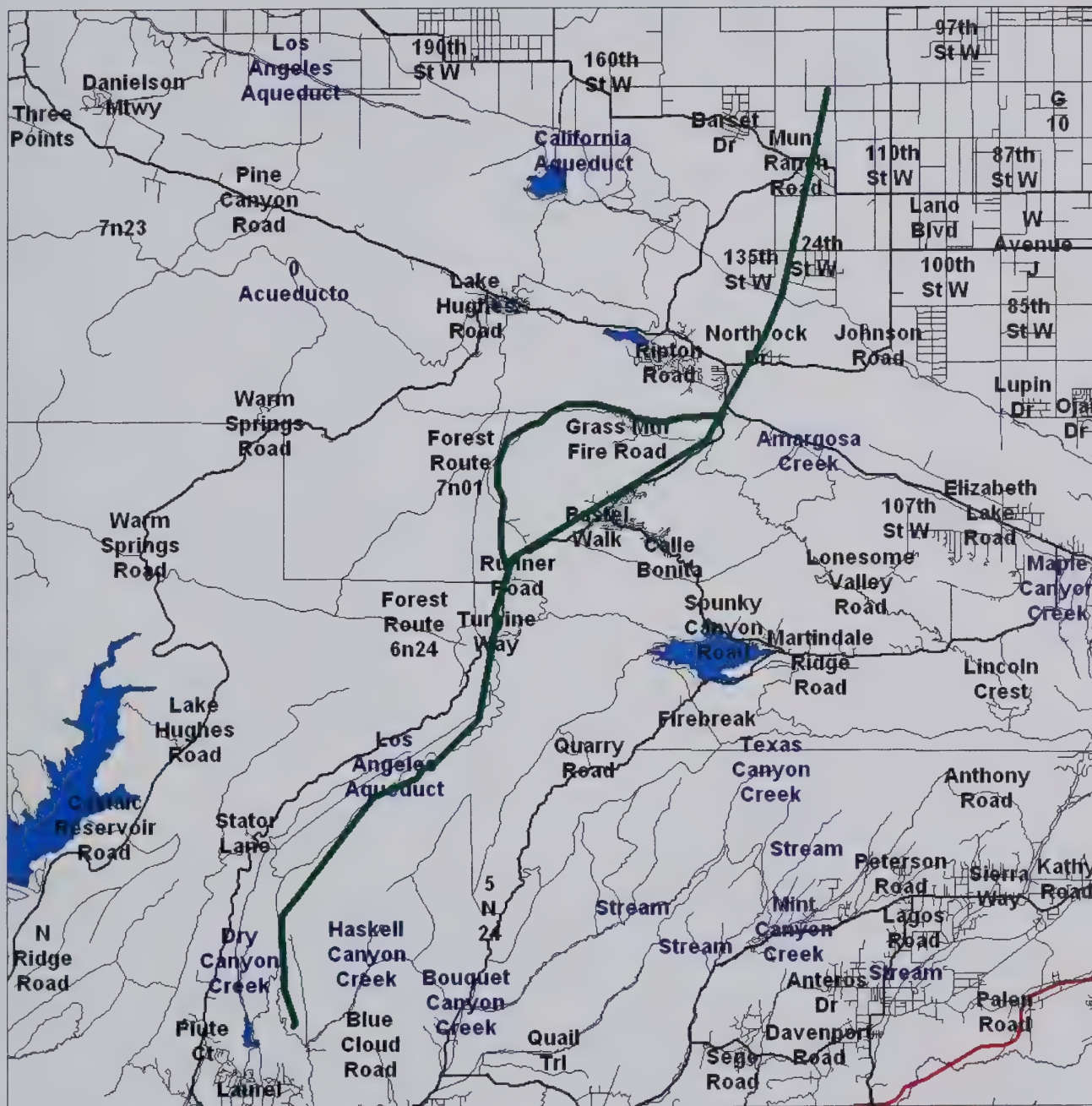


Environmental FirstSearch

1 Mile Radius from Line
ASTM-05: NPL, RCRACOR, STATE



SEGMENT G , LANCASTER CA 93536

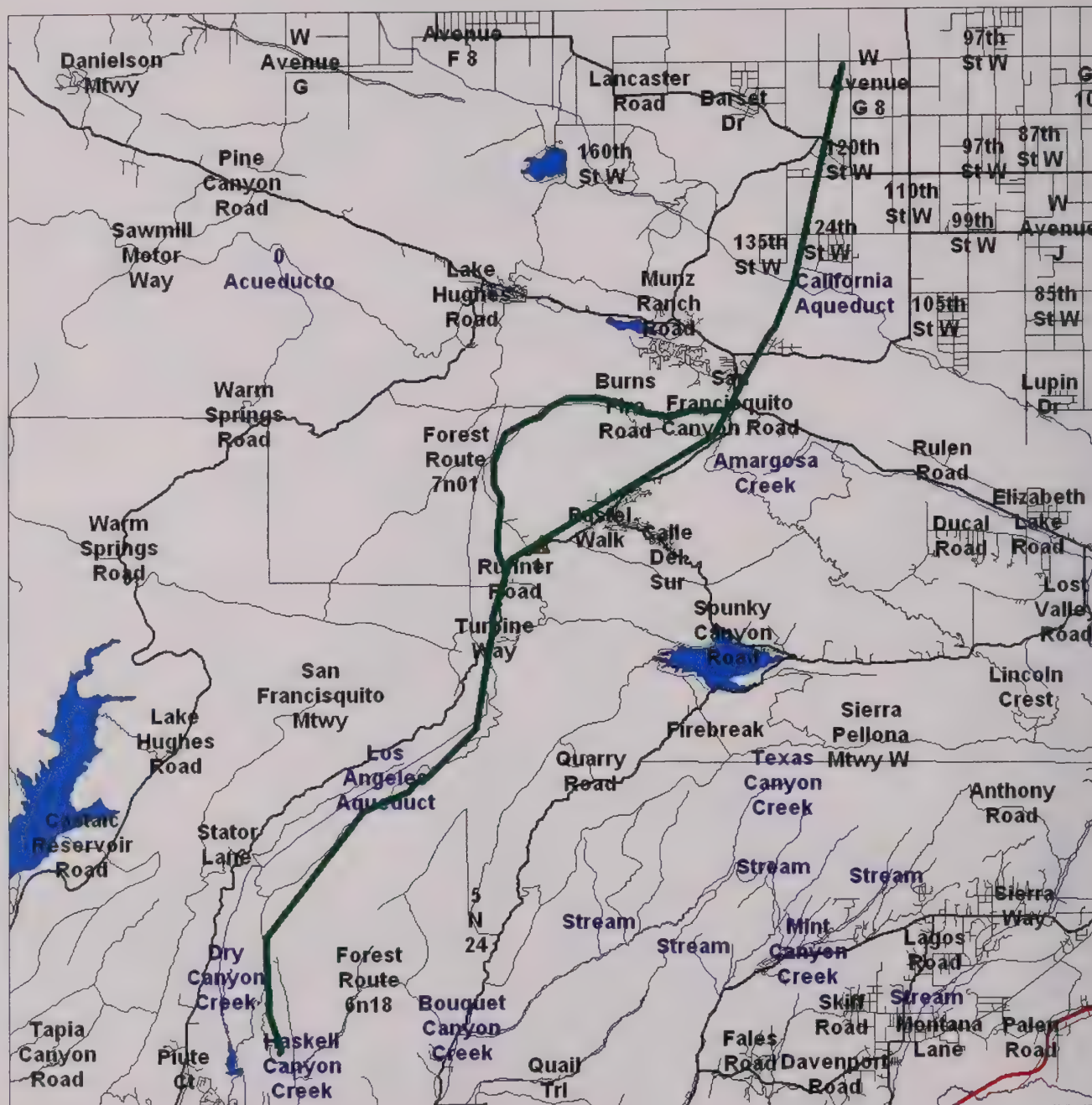


Source: U.S. Census TIGER Files

Linear Search Line
Identified Site, Multiple Sites, Receptor
NPL, DELNPL, Brownfield, Solid Waste Landfill (SWL), Hazardous Waste
Trnballand
Railroads



SEGMENT G , LANCASTER CA 93536



Source: U.S. Census TIGER Files

Linear Search Line
 Identified Site, Multiple Sites, Receptor
 NPL, DELNPL, Brownfield, Solid Waste Landfill (SWL), Hazardous Waste
 Triballand
 Railroads

***Environmental FirstSearch
Sites Summary Report***

Target Property: SEGMENT G
 LANCASTER CA 93536

JOB: BR RTP-G

TOTAL: 6 **GEOCODED:** 4 **NON GEOCODED:** 2 **SELECTED:** 6

DB Type	Site Name/ID/Status	Address	Dist/Dir	ElevDiff	Map ID	Page No.
HWMANIFEST	LA COUNTY FIRE DEPT SERVICE BU CAL931113263/ACTIVE	35100 SAN FRANCISQUITO CYN- SAUGUS CA 91390	0.05 SE	N/A	1	2
LUST	LOS ANGELES COUNTY FIRE DEPART T10000000556/OPEN - SITE ASSESSME	35100 SAN FRANCISQUITO CANY ELIZABETH LAKE CA 91390	0.05 SE	N/A	1	3
UST	LA CO FD FIRE CAMP 014 LAC0012431/NOT REPORTED	35100 W SAN FRANCISQUITO CY ELIZABETH LAKE CA 93532	0.05 SE	N/A	1	5
UST	GREEN VALLEY MARKET LAC0030393/NOT REPORTED	16166 W SPUNKY CANYON RD GREEN VALLEY CA 91390	0.19 SE	N/A	2	9

*Environmental FirstSearch
Sites Summary Report*

Target Property: SEGMENT G
 LANCASTER CA 93536

JOB: BR RTP-G

TOTAL: 6 **GEOCODED:** 4 **NON GEOCODED:** 2 **SELECTED:** 6

DB Type	Site Name/ID/Status	Address	Dist/Dir	ElevDiff	Map ID	Page No.
TRIBALLAND	BUREAU OF INDIAN AFFAIRS CONTA BIA-91390	UNKNOWN CA 91390	NON GC	N/A		11
TRIBALLAND	BUREAU OF INDIAN AFFAIRS CONTA BIA-93536	UNKNOWN CA 93536	NON GC	N/A		11

Environmental FirstSearch
Site Detail Report

Target Property: SEGMENT G
LANCASTER CA 93536

JOB: BR RTP-G

HWMANIFEST

SEARCH ID: 6 **DIST/DIR:** 0.05 SE **ELEVATION:** **MAP ID:** 1

NAME: LA COUNTY FIRE DEPT SERVICE BUREAU-C and M DIV	REV: 02/19/10
ADDRESS: 35100 SAN FRANCISQUITO CYN-CAMP 14	ID1: CAL931113263
SAUGUS CA 91390	ID2:
LOS ANGELES	STATUS: ACTIVE
CONTACT:	PHONE:
SOURCE: CADTSC	

THE CALIFORNIA DEPARTMENT OF TOXIC SUBSTANCES CONTROL HAZARDOUS WASTE MANIFEST INVENTORY (HWMII)
SITE INFORMATION FROM THE CA EPA AND DTSC HAZARDOUS WASTE TRACKING SYSTEM (HWTS) :

Date Record was Created:	4/21/1993
Inactivity Date:	
Facility Mail Name:	CandM DIVISION MANAGER
Facility Mailing Address:	PO BOX 32220, LOS ANGELES, CA 90032
Owner Name:	LA COUNTY FIRE DEPT
Owner Address:	1320 N EASTERN AVE, LOS ANGELES, CA 90063-1116
Contact Name:	PRINCIPAL FACILITIES MANAGER
Contact Address:	12605 OSBORNE ST, PACOIMA, CA 91331-2129
Contact Phone:	3238816121

HWMII WASTE TYPE AND TONNAGE INFORMATION BY YEAR 2005-2009:

2009 Method Type:	
2009 Waste Type:	
2009 Total Tonnage:	
2008 Waste Type:	Waste oil and mixed oil
2008 Total Tonnage:	1.178
2007 Waste Type:	Waste oil and mixed oil
2007 Total Tonnage:	0.834
2006 Waste Type:	Waste oil and mixed oil
2006 Total Tonnage:	0.52
2005 Waste Type:	Waste oil and mixed oil
2005 Total Tonnage:	0.83

HWMII WASTE TYPE AND TONNAGE INFORMATION BY YEAR 2000-2004:

2004 Waste Type:	Waste oil and mixed oil
2004 Total Tonnage:	1.31
2003 Waste Type:	Waste oil and mixed oil
2003 Total Tonnage:	1
2002 Waste Type:	Waste oil and mixed oil
2002 Total Tonnage:	0.89
2001 Waste Type:	Waste oil and mixed oil
2001 Total Tonnage:	1.04
2000 Waste Type:	
2000 Total Tonnage:	

HWMII WASTE TYPE AND TONNAGE INFORMATION BY YEAR 1993-1999:

1999 Waste Type:	Tank bottom waste
1999 Total Tonnage:	2.085
1998 Waste Type:	Unspecified solvent mixture
1998 Total Tonnage:	0.1425
1997 Waste Type:	
1997 Total Tonnage:	
1996 Waste Type:	Unspecified solvent mixture
1996 Total Tonnage:	0.1425
1995 Waste Type:	Tank bottom waste
1995 Total Tonnage:	0.2043
1994 Waste Type:	
1994 Total Tonnage:	
1993 Waste Type:	
1993 Total Tonnage:	

- Continued on next page -

***Environmental FirstSearch
Site Detail Report***

Target Property: SEGMENT G
 LANCASTER CA 93536

JOB: BR RTP-G

HWMANIFEST

SEARCH ID: 6	DIST/DIR: 0.05 SE	ELEVATION:	MAP ID: 1
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NAME: LA COUNTY FIRE DEPT SERVICE BUREAU-C and M DIV
ADDRESS: 35100 SAN FRANCISQUITO CYN-CAMP 14
 SAUGUS CA 91390
 LOS ANGELES

REV: 02/19/10
ID1: CAL931113263
ID2:
STATUS: ACTIVE
PHONE:

CONTACT:
SOURCE: CA DTSC

**Environmental FirstSearch
Site Detail Report**

Target Property: SEGMENT G
LANCASTER CA 93536

JOB: BR RTP-G

LUST

SEARCH ID: 3 **DIST/DIR:** 0.05 SE **ELEVATION:** **MAP ID:** 1

NAME: LOS ANGELES COUNTY FIRE DEPARTMENT FIRE CAMP 014 **REV:** 06/22/10
ADDRESS: 35100 SAN FRANCISQUITO CANYON RD **ID1:** T10000000556
ELIZABETH LAKE CA 91390 **ID2:**
LOS ANGELES **STATUS:** OPEN - SITE ASSESSMENT
CONTACT: **PHONE:**
SOURCE: CA SWRCB

RELEASE DATA FROM THE CALIFORNIA STATE WATER RESOURCES CONTROL BOARD LUSTIS DATABASE

Please note that some data previously provided by the State Water Resources Control Board in the LUSTIS database is not currently being provided by the agency in the most recent edition. Incidents that occurred after the year 2000 may not have much information. Field headers with blank information following after should be interpreted as unreported by the agency.

LEAD AGENCY: LOS ANGELES COUNTY
REGIONAL BOARD CASE NUMBER:
LOCAL AGENCY: LOS ANGELES COUNTY
LOCAL CASE NUMBER: 012431-012564
RESPONSIBLE PARTY:
ADDRESS OF RESPONSIBLE PARTY:
SITE OPERATOR:
WATER SYSTEM:

CASE TYPE: LUST Cleanup Site
POTENTIAL CONTAMINANTS OF CONCERN:
POTENTIAL MEDIA AFFECTED:
LEAK CAUSE:
LEAK SOURCE:
HOW LEAK WAS DISCOVERED:
DATE DISCOVERED (blank if not reported):
HOW LEAK WAS STOPPED:
STOP DATE (blank if not reported):
STATUS: Open - Site Assessment
STATUS DATE: 2008-04-30
ABATEMENT METHOD (please note that not all code translations have been provided by the reporting agency):
ENFORCEMENT TYPE (please note that not all code translations have been provided by the reporting agency):
DATE OF ENFORCEMENT (blank if not reported):
SITE HISTORY (blank if not reported):

MTBE DATA FROM THE CALIFORNIA STATE WATER RESOURCES CONTROL BOARD LUSTIS DATABASE

MTBE DATE (Date of historical maximum MTBE concentration):
MTBE GROUNDWATER CONCENTRATION (parts per billion):
MTBE SOIL CONCENTRATION (parts per million):
MTBE CNTS:
MTBE FUEL:
MTBE TESTED:
MTBE CLASS:

**Environmental FirstSearch
Site Detail Report**

Target Property: SEGMENT G
LANCASTER CA 93536

JOB: BRRTP-G

UST

SEARCH ID: 2 **DIST/DIR:** 0.05 SE **ELEVATION:** 2639 **MAP ID:** 1

NAME: LA CO FD FIRE CAMP 014 ADDRESS: 35100 W SAN FRANCISQUITO CYN RD ELIZABETH LAKE CA 91390 LOS ANGELES CONTACT: CAPT DALE RANKIN SOURCE: LA COUNTY DPW	REV: 05/02/09 ID1: LACO012431 ID2: THOMAS GUIDE 4192A4 STATUS: NOT REPORTED PHONE: 6612970784
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According to the Los Angeles County Department of Public Works the following information is current as of 05/02/09

GENERAL INFORMATION REGARDING SITE

Tax Accessors Parcel /s:	3243 / 004 / 270
File Number:	012564
File Name:	LA CO FD FIRE CAMP 014
Property Owner Name and Type:	/
Property Owner Address:	,
Tank Owner Name and Type:	/
Tank Owner Address:	,
Tank Owner Phone:	/

PERMIT INFORMATION

Permit Number and Category:	00002284A / TANK
Permit Type and Date:	ADD ADDITIONAL TANK / 19890831
Permit Expiration Date:	19940831
Permit Status:	REM
Fee Exempt:	Yes
Penalty Date/s:	/
Suspension Date and Reason:	/

PERMIT INFORMATION

Permit Number and Category:	00004321T / TANK
Permit Type and Date:	UST OPERATING PERMIT / 19930511
Permit Expiration Date:	20000630
Permit Status:	SUSP
Fee Exempt:	Yes
Penalty Date/s:	/
Suspension Date and Reason:	20000630 / 20000630

SPECIFIC TANK INFORMATION FOR TANK NUMBER: 00001

Unique Tank Number:	000021528
Status:	Removed
Installation Date:	19650101
Owner Number:	1
Capacity:	0000004000
Content:	
J Fuel Type:	JET FUEL
CAS Number:	
Product or Waste in Tank (?):	PRODUCT

SPECIFIC TANK INFORMATION FOR TANK NUMBER: 00002

Unique Tank Number:	000021529
Status:	Permanent
Installation Date:	19650101
Owner Number:	2
Capacity:	0000000280
Content:	
J Fuel Type:	PREMIUM UNLEADED GASOLINE
CAS Number:	
Product or Waste in Tank (?):	PRODUCT

- Continued on next page -

**Environmental FirstSearch
Site Detail Report**

Target Property: SEGMENT G
LANCASTER CA 93536

JOB: BRRTP-G

UST

SEARCH ID: 2 **DIST/DIR:** 0.05 SE **ELEVATION:** 2639 **MAP ID:** 1

NAME: LA CO FD FIRE CAMP 014	REV: 05/02/09
ADDRESS: 35100 W SAN FRANCISQUITO CYN RD	ID1: LACO012431
ELIZABETH LAKE CA 91390	ID2: THOMAS GUIDE 4192A4
LOS ANGELES	STATUS: NOT REPORTED
CONTACT: CAPT DALE RANKIN	PHONE: 6612970784
SOURCE: LA COUNTY DPW	

SPECIFIC TANK INFORMATION FOR TANK NUMBER: 00003

Unique Tank Number: 000021530
Status: Removed
Installation Date: 19650101
Owner Number: 3
Capacity: 0000001000
Content:
J Fuel Type: PREMIUM UNLEADED GASOLINE
CAS Number:
Product or Waste in Tank (?): PRODUCT

SPECIFIC TANK INFORMATION FOR TANK NUMBER: 00004

Unique Tank Number: 000021531
Status: Removed
Installation Date: 19650101
Owner Number: 04
Capacity: 0000002000
Content:
J Fuel Type: DIESEL
CAS Number:
Product or Waste in Tank (?): PRODUCT

TANK CLOSING and REMOVAL INFORMATION (if applicable) FOR TANK : 00001

Application Closing Number: 000241967
Date Tank Closed: 19991015
Last Used Date: 19991015
Remaining Quantity: 0000000000
Inert Fill: NO
Removal Application Number: 000241967

TANK CLOSING and REMOVAL INFORMATION (if applicable) FOR TANK : 00002

Application Closing Number:
Date Tank Closed:
Last Used Date:
Remaining Quantity: 0000000000
Inert Fill:
Removal Application Number:

TANK CLOSING and REMOVAL INFORMATION (if applicable) FOR TANK : 00003

Application Closing Number: 000219837
Date Tank Closed: 19980628
Last Used Date: 19980628
Remaining Quantity: 0000000000
Inert Fill: NO
Removal Application Number: 000219837

TANK CLOSING and REMOVAL INFORMATION (if applicable) FOR TANK : 00004

Application Closing Number: 000219837
Date Tank Closed: 19980628
Last Used Date: 19980628
Remaining Quantity: 0000000000
Inert Fill: NO
Removal Application Number: 000219837

- Continued on next page -

**Environmental FirstSearch
Site Detail Report**

Target Property: SEGMENT G
LANCASTER CA 93536

JOB: BR RTP-G

UST

SEARCH ID: 2 **DIST/DIR:** 0.05 SE **ELEVATION:** 2639 **MAP ID:** 1

NAME: LA CO FD FIRE CAMP 014
ADDRESS: 35100 W SAN FRANCISQUITO CYN RD
ELIZABETH LAKE CA 91390
LOS ANGELES
CONTACT: CAPT DALE RANKIN
SOURCE: LA COUNTY DPW

REV: 05/02/09
ID1: LACO012431
ID2: THOMAS GUIDE 4192A4
STATUS: NOT REPORTED
PHONE: 6612970784

TANK and PIPING MATERIALS (if applicable) FOR TANK : 00001

Manufacturer: UNKNOWN
Construction Type Description:
Construction Material Description:
Construction Lining Description:
Piping Type Description:
Piping Construction Description:
Piping Material Description:
Piping Leak Detection Description:
Leak Detection System 1:
Leak Detection System 2:
Last Update: 20000322
Last Operator: E400536

TANK and PIPING MATERIALS (if applicable) FOR TANK : 00002

Manufacturer: UNKNOWN
Construction Type Description:
Construction Material Description:
Construction Lining Description:
Piping Type Description:
Piping Construction Description:
Piping Material Description:
Piping Leak Detection Description:
Leak Detection System 1:
Leak Detection System 2:
Last Update: 19981208
Last Operator: E274419

TANK and PIPING MATERIALS (if applicable) FOR TANK : 00003

Manufacturer: UNKNOWN
Construction Type Description:
Construction Material Description: CARBON STEEL
Construction Lining Description:
Piping Type Description:
Piping Construction Description:
Piping Material Description:
Piping Leak Detection Description:
Leak Detection System 1:
Leak Detection System 2:
Last Update: 19980803
Last Operator: E274419

TANK and PIPING MATERIALS (if applicable) FOR TANK : 00004

Manufacturer: UNKNOWN
Construction Type Description:
Construction Material Description:
Construction Lining Description:
Piping Type Description:
Piping Construction Description:
Piping Material Description:
Piping Leak Detection Description:
Leak Detection System 1:

- Continued on next page -

Environmental FirstSearch
Site Detail Report

Target Property: SEGMENT G
 LANCASTER CA 93536

JOB: BR RTP-G

UST

SEARCH ID: 2	DIST/DIR: 0.05 SE	ELEVATION: 2639	MAP ID: 1
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NAME: LA CO FD FIRE CAMP 014
ADDRESS: 35100 W SAN FRANCISQUITO CYN RD
 ELIZABETH LAKE CA 91390
 LOS ANGELES
CONTACT: CAPT DALE RANKIN
SOURCE: LA COUNTY DPW

REV: 05/02/09
ID1: LACO012431
ID2: THOMAS GUIDE 4192A4
STATUS: NOT REPORTED
PHONE: 6612970784

Leak Detection System 2:

Last Update:	19980803
Last Operator:	E274419

**Environmental FirstSearch
Site Detail Report**

Target Property: SEGMENT G
LANCASTER CA 93536

JOB: BR RTP-G

UST

SEARCH ID: 1 **DIST/DIR:** 0.19 SE **ELEVATION:** 2917 **MAP ID:** 2

NAME: GREEN VALLEY MARKET
ADDRESS: 16166 W SPUNKY CANYON RD
GREEN VALLEY CA 91350
LOS ANGELES
CONTACT: MOTIE JABER
SOURCE: LA COUNTY DPW

REV: 05/02/09
ID1: LACO030393
ID2: THOMAS GUIDE 4192D3
STATUS: NOT REPORTED
PHONE: 9516940996

According to the Los Angeles County Department of Public Works the following information is current as of 05/02/09

GENERAL INFORMATION REGARDING SITE

Tax Accessors Parcel /s: 3234 / 024 / 034
File Number: 044536
File Name: GREEN VALLEY MARKET
Property Owner Name and Type: JABER HANNOUN INC / CORPORATION
Property Owner Address: 2830 VAHAN CT LANCASTER, CA 93536
Tank Owner Name and Type: JABER HANNOUN INC / CORPORATION
Tank Owner Address: 2830 VAHAN CT LANCASTER, CA 93536
Tank Owner Phone: 661/7145418

PERMIT INFORMATION

Permit Number and Category: 000515514 / TANK
Permit Type and Date: UST OPERATING PERMIT / 20070320
Permit Expiration Date: 20090630
Permit Status: PERM
Fee Exempt: No
Penalty Date/s: /
Suspension Date and Reason: /

SPECIFIC TANK INFORMATION FOR TANK NUMBER: 00004

Unique Tank Number: 000041912
Status: Permanent
Installation Date: 20080128
Owner Number: 1
Capacity: 0000020000
Content:
J Fuel Type: REGULAR UNLEADED GASOLINE
CAS Number:
Product or Waste in Tank (?): PRODUCT

SPECIFIC TANK INFORMATION FOR TANK NUMBER: 00005

Unique Tank Number: 000041913
Status: Permanent
Installation Date: 20080128
Owner Number: 2A
Capacity: 0000005000
Content:
J Fuel Type: PREMIUM UNLEADED GASOLINE
CAS Number:
Product or Waste in Tank (?): PRODUCT

SPECIFIC TANK INFORMATION FOR TANK NUMBER: 00006

Unique Tank Number: 000041914
Status: Permanent
Installation Date: 20080128
Owner Number: 2B
Capacity: 0000005000
Content:
J Fuel Type: DIESEL
CAS Number:

- Continued on next page -

Environmental FirstSearch
Site Detail Report

Target Property: SEGMENT G
LANCASTER CA 93536

JOB: BR RTP-G

UST

SEARCH ID: 1 **DIST/DIR:** 0.19 SE **ELEVATION:** 2917 **MAP ID:** 2

NAME: GREEN VALLEY MARKET
ADDRESS: 16166 W SPUNKY CANYON RD
GREEN VALLEY CA 91350
LOS ANGELES
CONTACT: MOTIE JABER
SOURCE: LA COUNTY DPW

REV: 05/02/09
ID1: LACO030393
ID2: THOMAS GUIDE 4192D3
STATUS: NOT REPORTED
PHONE: 9516940996

Product or Waste in Tank (?): PRODUCT

TANK CLOSING and REMOVAL INFORMATION (if applicable) FOR TANK : 00004

Application Closing Number:

Date Tank Closed:

Last Used Date:

Remaining Quantity: 0000000000

Inert Fill:

Removal Application Number:

TANK CLOSING and REMOVAL INFORMATION (if applicable) FOR TANK : 00005

Application Closing Number:

Date Tank Closed:

Last Used Date:

Remaining Quantity: 0000000000

Inert Fill:

Removal Application Number:

TANK CLOSING and REMOVAL INFORMATION (if applicable) FOR TANK : 00006

Application Closing Number:

Date Tank Closed:

Last Used Date:

Remaining Quantity: 0000000000

Inert Fill:

Removal Application Number:

TANK and PIPING MATERIALS (if applicable) FOR TANK : 00004

Manufacturer: MODERN WELDING

Construction Type Description:

Construction Material Description:

Construction Lining Description:

Piping Type Description:

Piping Construction Description:

Piping Material Description:

Piping Leak Detection Description:

Leak Detection System 1:

Leak Detection System 2:

Last Update: 20080129

Last Operator: E512980

TANK and PIPING MATERIALS (if applicable) FOR TANK : 00005

Manufacturer: MODERN WELDING

Construction Type Description:

Construction Material Description:

Construction Lining Description:

Piping Type Description:

Piping Construction Description:

Piping Material Description:

Piping Leak Detection Description:

Leak Detection System 1:

Leak Detection System 2:

Last Update: 20080129

Last Operator: E512980

- Continued on next page -

JOB: BR RTP-G

REV: 05/02/09
ID1: LACO030393
ID2: THOMAS GUIDE 4192D3
STATUS: NOT REPORTED
PHONE: 9516940996

Construction Type Description:
Construction Material Description:
Construction Lining Description:
Piping Type Description:
Piping Construction Description:
Piping Material Description:
Piping Leak Detection Description:
Leak Detection System 1:
Leak Detection System 2:
Last Update:
Last Operator:

**Environmental FirstSearch
Site Detail Report**

Target Property: SEGMENT G
LANCASTER CA 93536

JOB: BR RTP-G

TRIBALLAND

SEARCH ID: 5 **DIST/DIR:** NON GC **ELEVATION:** **MAP ID:**

NAME: BUREAU OF INDIAN AFFAIRS CONTACT INFORMATION
ADDRESS: UNKNOWN
CA 91390

REV: 01/15/08
ID1: BIA-91390
ID2:
STATUS:
PHONE:

CONTACT:
SOURCE: BIA

DETAILS NOT AVAILABLE

TRIBALLAND

SEARCH ID: 4 **DIST/DIR:** NON GC **ELEVATION:** **MAP ID:**

NAME: BUREAU OF INDIAN AFFAIRS CONTACT INFORMATION
ADDRESS: UNKNOWN
CA 93536
LOS ANGELES

REV: 01/15/08
ID1: BIA-93536
ID2:
STATUS:
PHONE:

CONTACT:
SOURCE: BIA

BUREAU OF INDIAN AFFAIRS CONTACT INFORMATION

OFFICE: Pacific Regional Office
CONTACT: CLAY GREGORY, REGIONAL DIRECTOR

ADDRESS: 2800 Cottage Way
Sacramento CA 95825

PHONE: Phone: 916-978-6000
FAX: Fax: 916-978-6099

The Native American Consultation Database (NACD) is a tool for identifying consultation contacts for Indian tribes, Alaska Native villages and corporations, and Native Hawaiian organizations. The database is not a comprehensive source of information, but it does provide a starting point for the consultation process by identifying tribal leaders and NAGPRA contacts. This database can be accessed online at the following web address
<http://home.nps.gov/nacd/>

Environmental FirstSearch Descriptions

NPL: EPA NATIONAL PRIORITY LIST - The National Priorities List is a list of the worst hazardous waste sites that have been identified by Superfund. Sites are only put on the list after they have been scored using the Hazard Ranking System (HRS), and have been subjected to public comment. Any site on the NPL is eligible for cleanup using Superfund Trust money.

A Superfund site is any land in the United States that has been contaminated by hazardous waste and identified by the Environmental Protection Agency (EPA) as a candidate for cleanup because it poses a risk to human health and/or the environment.

FINAL - Currently on the Final NPL

PROPOSED - Proposed for NPL

NPL DELISTED: EPA NATIONAL PRIORITY LIST Subset - Database of delisted NPL sites. The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

DELISTED - Deleted from the Final NPL

CERCLIS: EPA COMPREHENSIVE ENVIRONMENTAL RESPONSE COMPENSATION AND LIABILITY INFORMATION SYSTEM (CERCLIS)- CERCLIS is a database of potential and confirmed hazardous waste sites at which the EPA Superfund program has some involvement. It contains sites that are either proposed to be or are on the National Priorities List (NPL) as well as sites that are in the screening and assessment phase for possible inclusion on the NPL.

PART OF NPL- Site is part of NPL site

DELETED - Deleted from the Final NPL

FINAL - Currently on the Final NPL

NOT PROPOSED - Not on the NPL

NOT VALID - Not Valid Site or Incident

PROPOSED - Proposed for NPL

REMOVED - Removed from Proposed NPL

SCAN PLAN - Pre-proposal Site

WITHDRAWN - Withdrawn

NFRAP: EPA COMPREHENSIVE ENVIRONMENTAL RESPONSE COMPENSATION AND LIABILITY INFORMATION SYSTEM ARCHIVED SITES - database of Archive designated CERCLA sites that, to the best of EPA's knowledge, assessment has been completed and has determined no further steps will be taken to list this site on the National Priorities List (NPL). This decision does not necessarily mean that there is no hazard associated with a given site; it only means that, based upon available information, the location is not judged to be a potential NPL site.

NFRAP - No Further Remedial Action Plan

P - Site is part of NPL site

D - Deleted from the Final NPL

F - Currently on the Final NPL

N - Not on the NPL

O - Not Valid Site or Incident

P - Proposed for NPL

R - Removed from Proposed NPL

S - Pre-proposal Site

W - Withdrawn

RCRA COR ACT: EPA RESOURCE CONSERVATION AND RECOVERY INFORMATION SYSTEM SITES - Database of hazardous waste information contained in the Resource Conservation and Recovery Act Information (RCRAInfo), a national program management and inventory system about hazardous waste handlers. In general, all generators, transporters, treaters, storers, and disposers of hazardous waste are required to provide information about their activities to state environmental agencies. These agencies, in turn pass on the information to regional and national EPA offices. This regulation is governed by the Resource Conservation and Recovery Act (RCRA), as amended by the Hazardous and Solid Waste Amendments of 1984.

RCRAInfo facilities that have reported violations and subject to corrective actions.

RCRA TSD: EPA RESOURCE CONSERVATION AND RECOVERY INFORMATION SYSTEM TREATMENT, STORAGE, and DISPOSAL FACILITIES. - Database of hazardous waste information contained in the Resource Conservation and Recovery Act Information (RCRAInfo), a national program management and inventory system about hazardous waste handlers. In general, all generators, transporters, treaters, storers, and disposers of hazardous waste are required to provide information about their activities to state environmental agencies. These agencies, in turn pass on the information to regional and national EPA offices. This regulation is governed by the Resource Conservation and Recovery Act (RCRA), as amended by the Hazardous and Solid Waste Amendments of 1984.

Facilities that treat, store, dispose, or incinerate hazardous waste.

RCRA GEN: EPAMA DEP/CT DEP RESOURCE CONSERVATION AND RECOVERY INFORMATION SYSTEM GENERATORS - Database of hazardous waste information contained in the Resource Conservation and Recovery Act Information (RCRAInfo), a national program management and inventory system about hazardous waste handlers. In general, all generators, transporters, treaters, storers, and disposers of hazardous waste are required to provide information about their activities to state environmental agencies. These agencies, in turn pass on the information to regional and national EPA offices. This regulation is governed by the Resource Conservation and Recovery Act (RCRA), as amended by the Hazardous and Solid Waste Amendments of 1984.

Facilities that generate or transport hazardous waste or meet other RCRA requirements.

LGN - Large Quantity Generators

SGN - Small Quantity Generators

VGN - Conditionally Exempt Generator.

Included are RAATS (RCRA Administrative Action Tracking System) and CMEL (Compliance Monitoring & Enforcement List) facilities.

CONNECTICUT HAZARDOUS WASTE MANIFEST - Database of all shipments of hazardous waste within, into or from Connecticut. The data includes date of shipment, transporter and TSD info, and material shipped and quantity. This data is appended to the details of existing generator records.

MASSACHUSETTES HAZARDOUS WASTE GENERATOR - database of generators that are regulated under the MA DEP.

VQN-MA = generates less than 220 pounds or 27 gallons per month of hazardous waste or waste oil.

SQN-MA = generates 220 to 2,200 pounds or 27 to 270 gallons per month of waste oil.

LQG-MA = generates greater than 2,200 lbs of hazardous waste or waste oil per month.

RCRA NLR: EPA RESOURCE CONSERVATION AND RECOVERY INFORMATION SYSTEM SITES - Database of hazardous waste information contained in the Resource Conservation and Recovery Act Information (RCRAInfo), a national program management and inventory system about hazardous waste handlers. In general, all generators, transporters, treaters, storers, and disposers of hazardous waste are required to provide information about their activities to state environmental agencies. These agencies, in turn pass on the information to regional and national EPA offices. This regulation is governed by the Resource Conservation and Recovery Act (RCRA), as amended by the Hazardous and Solid Waste Amendments of 1984.

Facilities not currently classified by the EPA but are still included in the RCRAInfo database. Reasons for non classification:

Failure to report in a timely matter.

No longer in business.

No longer in business at the listed address.

No longer generating hazardous waste materials in quantities which require reporting.

ERNS: EPA/NRC EMERGENCY RESPONSE NOTIFICATION SYSTEM (ERNS) - Database of incidents reported to the National Response Center. These incidents include chemical spills, accidents involving chemicals (such as fires or explosions), oil spills, transportation accidents that involve oil or chemicals, releases of radioactive materials, sightings of oil sheens on bodies of water, terrorist incidents involving chemicals, incidents where illegally dumped chemicals have been found, and drills intended to prepare responders to handle these kinds of incidents. Data since January 2001 has been received from the National Response System database as the EPA no longer maintains this data.

Tribal Lands: DOI/BIA INDIAN LANDS OF THE UNITED STATES - Database of areas with boundaries established by treaty, statute, and (or) executive or court order, recognized by the Federal Government as territory in which American Indian tribes have primary governmental authority. The Indian Lands of the United States map layer shows areas of 640 acres or more, administered by the Bureau of Indian Affairs. Included are

Federally-administered lands within a reservation which may or may not be considered part of the reservation.
BUREAU OF INDIAN AFFAIRS CONTACT - Regional contact information for the Bureau of Indian Affairs offices.

State/Tribal Sites: CA EPA SMBRPD / CAL SITES- The California Department of Toxic Substances Control (DTSC) has developed an electronic database system called Envirostor with information about sites that are known to be contaminated with hazardous substances as well as information on uncharacterized properties where further studies may reveal problems. The Site Mitigation and Brownfields Reuse Program Database (SMBRPD), formerly known as CalSites, is used primarily by DTSC's staff as an informational tool to evaluate and track activities at properties that may have been affected by the release of hazardous substances. The SMBRPD displays information in six categories, two of which are found in ST. The categories listed under ST are:

1. State Response Sites.

2. School Property Evaluation Program Properties (SCH)

Please Note: Our reports list the above sites as DB Type (STATE). Other categories found in the SMBRPD are listed in our reports in the DB Types OT and VC.

Each Category contains information on properties based upon the type of work taking place at the site. State Response Sites contains only known and potential hazardous substance release sites considered as posing the greatest threat to the public. School sites included in ST will be found within the SMBRPD's School Property Evaluation Program.

CORTESE LIST-Pursuant to Government Code Section 65962.5, the Hazardous Waste and Substances Sites List has been compiled by Cal/EPA, Hazardous Materials Data Management Program to provide information about the location of hazardous materials release sites. Cortese List sites that fall under DTSC's guidelines for State Response sites are included in our reports in the ST category as are qualifying sites from the Annual Work Plan (formerly Bond Expenditure Plan) and the historic ASPIS databases.

State Spills 90: CA EPA SLIC REGIONS 1 - 9- The California Regional Water Quality Control Boards maintain report of sites that have records of spills, leaks, investigation, and cleanups.

State/Tribal SWL: CA IWMB/SWRCB/COUNTY SWIS SOLID WASTE INFORMATION SYSTEM-The California Integrated Waste Management Board maintains a database on solid waste facilities, operations, and disposal sites throughout the state of California. The types of facilities found in this database include landfills, transfer stations, material recovery facilities, composting sites, transformation facilities, waste tire sites, and closed disposal sites. For more information on individual sites call the number listed in the source field..

Please Note: This database contains poor site location information for many sites in our reports; therefore, it may not be possible to locate or plot some sites in our reports.

WMUDS-The State Water Resources Control Board maintained the Waste Management Unit Database System (WMUDS). It is no longer updated. It tracked management units for several regulatory programs related to waste management and its potential impact on groundwater. Two of these programs (SWAT & TPCA) are no longer on-going regulatory programs as described below. Chapter 15 (SC15) is still an on-going regulatory program and information is updated periodically but not to the WMUDS database. The WMUDS System contains information from the following agency databases: Facility, Waste Management Unit (WMU), Waste Discharger System (WDS), SWAT, Chapter 15, TPCA, RCRA, Inspections, Violations, and Enforcement's.

Note: This database contains poor site location information for many sites in our reports; therefore, it may not be possible to locate or plot some sites in reports.

ORANGE COUNTY LANDFILLS LIST- A list maintained by the Orange County Health Department.

State/Tribal LUST: CA SWRCB/COUNTY LUSTIS- The State Water Resources Control Board maintains a database of sites with confirmed or unconfirmed leaking underground storage tanks. Information for this database is collected from the states regional boards quarterly and integrated with this database.

SAN DIEGO COUNTY LEAKING TANKS- The San Diego County Department of Environmental Health maintains a database of sites with confirmed or unconfirmed leaking underground storage tanks within its HE17/58 database. For more information on a specific file call the HazMat Duty Specialist at phone number listed in the source information field.

State/Tribal UST/AST: CA EPA/COUNTY/CITY ABOVEGROUND STORAGE TANKS LISTING-The Above Ground Petroleum Storage Act became State Law effective January 1, 1990. In general, the law requires owners or operators of AST's with petroleum products to file a storage statement and pay a fee by July 1, 1990 and every two years thereafter, take specific action to prevent spills, and in certain instances implement a groundwater monitoring program. This law does not apply to that portion of a tank facility associated with the

production oil and regulated by the State Division of Oil and Gas of the Dept. of Conservation.

SWEEPS / FIDS STATE REGISTERED UNDERGROUND STORAGE TANKS- Until 1994 the State Water Resources Control Board maintained a database of registered underground storage tanks statewide referred to as the SWEEPS System. The SWEEPS UST information was integrated with the CAL EPA's Facility Index System database (FIDS) which is a master index of information from numerous California agency environmental databases. That was last updated in 1994. We have included the UST information from the FIDS database in our reports for historical purposes to help our clients identify where tanks may possibly have existed. For more information on specific sites from individual paper files archived at the State Water Resources Control Board call the number listed with the source information.

INDIAN LANDS UNDERGROUND STORAGE TANKS LIST- A listing of underground storage tanks currently on Indian Lands under federal jurisdiction. California Indian Land USTS are administered by US EPA Region 9.

CUPA DATABASES & SOURCES- Definition of a CUPA: A Certified Unified Program Agency (CUPA) is a local agency that has been certified by the CAL EPA to implement six state environmental programs within the local agency's jurisdiction. These can be a county, city, or JPA (Joint Powers Authority). This program was established under the amendments to the California Health and Safety Code made by SB 1082 in 1994.

A Participating Agency (PA) is a local agency that has been designated by the local CUPA to administer one or more Unified Programs within their jurisdiction on behalf of the CUPA. A Designated Agency (DA) is an agency that has not been certified by the CUPA but is the responsible local agency that would implement the six unified programs until they are certified.

Please Note: We collect and maintains information regarding Underground Storage Tanks from the majority of the CUPAS and Participating Agencies in the State of California. These agencies typically do not maintain nor release such information on a uniform or consistent schedule; therefore, currency of the data may vary. Please look at the details on a specific site with a UST record in the First Search Report to determine the actual currency date of the record as provided by the relevant agency. Numerous efforts are made on a regular basis to obtain updated records.

State/Tribal IC: CA EPA DEED-RESTRICTED SITES LISTING- The California EPA's Department of Toxic Substances Control Board maintains a list of deed-restricted sites, properties where the DTSC has placed limits or requirements on the future use of the property due to varying levels of cleanup possible, practical or necessary at the site.

State/Tribal VCP: CA EPA SMBRPD / CAL SITES- The California Department of Toxic Substances Control (DTSC) has developed an electronic database system called Envirostor with information about sites that are known to be contaminated with hazardous substances as well as information on uncharacterized properties where further studies may reveal problems. The Site Mitigation and Brownfields Reuse Program Database (SMBRPD), formerly known as CalSites, is used primarily by DTSC's staff as an informational tool to evaluate and track activities at properties that may have been affected by the release of hazardous substances. The Voluntary Cleanup Program (VCP) category contains only those properties undergoing voluntary investigation and/or cleanup and which are listed in the Voluntary Cleanup Program.

Please Note: Our reports list the above sites as DB Type VC.

RADON: NTIS NATIONAL RADON DATABASE - EPA radon data from 1990-1991 national radon project collected for a variety of zip codes across the United States.

State Permits: CA EPA/COUNTY SAN DIEGO COUNTY HE17 PERMITS- The HE17/58 database tracks establishments issued permits and the status of their permits in relation to compliance with federal, state, and local regulations that the County oversees. It tracks if a site is a hazardous waste generator, TSD, gas station, has underground tanks, violations, or unauthorized releases. For more information on a specific file call the HazMat Duty Specialist at the phone number listed in the source information field.

SAN BERNARDINO COUNTY HAZARDOUS MATERIALS PERMITS- Handlers and Generators Permit Information Maintained by the Hazardous Materials Division.

State Other: CA EPA/COUNTY SMBRPD / CAL SITES- The California Department of Toxic Substances Control (DTSC) has developed an electronic database system called Envirostor with information about sites that are known to be contaminated with hazardous substances as well as information on uncharacterized properties where further studies may reveal problems. The Site Mitigation and Brownfields Reuse Program Database (SMBRPD), formerly known as CalSites, is used primarily by DTSC's staff as an informational tool to evaluate and track activities at properties that may have been affected by the release of hazardous substances.

The SMBRPD displays information in six categories, two of which are found in ST. The categories listed under

OT are:

1. Unconfirmed Properties Referred to Another Local or State Agency (REF)

2. Properties where a No Further Action Determination has been made (NFA)

Please Note: Our reports list the above sites as DB Type (OTHER). Other categories found in the SMBRPD are listed in our reports in the DB Types ST and VC.

LA COUNTY SITE MITIGATION COMPLAINT CONTROL LOG- The County of Los Angeles Public Health Investigation Compliant Control Log.

ORANGE COUNTY INDUSTRIAL SITE CLEANUPS- List maintained by the Orange County Environmental Health Agency.

RIVERSIDE COUNTY WASTE GENERATORS-A list of facilities in Riverside County which generate hazardous waste.

SACRAMENTO COUNTY MASTER HAZMAT LIST-Master list of facilities within Sacramento County with potentially hazardous materials.

SACRAMENTO COUNTY TOXIC SITE CLEANUPS-A list of sites where unauthorized releases of potentially hazardous materials have occurred.

HW Manifest: *CA EPA* DEPARTMENT OF TOXIC SUBSTANCES CONTROL HAZARDOUS WASTE MANIFEST INVENTORY-Records maintained by the CA DTSC of Hazardous Waste Manifests used to track and document the transport of hazardous waste from a generator's site to the site of its final disposition.

Environmental FirstSearch Database Sources

NPL: *EPA* Environmental Protection Agency

Updated quarterly

NPL DELISTED: *EPA* Environmental Protection Agency

Updated quarterly

CERCLIS: *EPA* Environmental Protection Agency

Updated quarterly

NFRAP: *EPA* Environmental Protection Agency.

Updated quarterly

RCRA COR ACT: *EPA* Environmental Protection Agency.

Updated quarterly

RCRA TSD: *EPA* Environmental Protection Agency.

Updated quarterly

RCRA GEN: *EP/MA DEP/CT DEP* Environmental Protection Agency, Massachusetts Department of Environmental Protection, Connecticut Department of Environmental Protection

Updated quarterly

RCRA NLR: *EPA* Environmental Protection Agency

Updated quarterly

ERNS: *EPA/NRC* Environmental Protection Agency

Updated annually

Tribal Lands: *DOI/BIA* United States Department of the Interior

Updated annually

State/Tribal Sites: *CA EPA* The CAL EPA, Depart. Of Toxic Substances Control
Phone: (916) 323-3400

Updated quarterly/when available

State Spills 90: CA EPA The California State Water Resources Control Board

Updated when available

State/Tribal SWL: CA IWMB/SWRCB/COUNTY The California Integrated Waste Management Board

Phone:(916) 255-2331

The State Water Resources Control Board

Phone:(916) 227-4365

Orange County Health Department

Updated quarterly/when available

State/Tribal LUST: CA SWRCB/COUNTY The California State Water Resources Control Board

Phone:(916) 227-4416

San Diego County Department of Environmental Health

Updated quarterly/when available

State/Tribal UST/AST: CA EPA/COUNTY/CITY The State Water Resources Control Board

Phone:(916) 227-4364

CAL EPA Department of Toxic Substances Control

Phone:(916)227-4404

US EPA Region 9 Underground Storage Tank Program

Phone: (415) 972-3372

ALAMEDA COUNTY CUPAS:

- * County of Alameda Department of Environmental Health

- * Cities of Berkeley, Fremont, Hayward, Livermore / Pleasanton, Newark, Oakland, San Leandro, Union

ALPINE COUNTY CUPA:

- * Health Department (Only updated by agency sporadically)

AMADOR COUNTY CUPA:

- * County of Amador Environmental Health Department

BUTTE COUNTY CUPA

- * County of Butte Environmental Health Division (Only updated by agency biannually)

CALAVERAS COUNTY CUPA:

- * County of Calaveras Environmental Health Department

COLUSA COUNTY CUPA:

- * Environmental Health Dept.

CONTRA COSTA COUNTY CUPA:

- * Hazardous Materials Program

DEL NORTE COUNTY CUPA:

- * Department of Health and Social Services

EL DORADO COUNTY CUPAS:

- * County of El Dorado Environmental Health - Solid Waste Div (Only updated by agency annually)

- * County of El Dorado EMD Tahoe Division (Only updated by agency annually)

FRESNO COUNTY CUPA:

- * Haz. Mat and Solid Waste Programs

GLENN COUNTY CUPA:

- * Air Pollution Control District

HUMBOLDT COUNTY CUPA:

- * Environmental Health Division

IMPERIAL COUNTY CUPA:

- * Department of Planning and Building

INYO COUNTY CUPA:

- * Environmental Health Department

KERN COUNTY CUPA:

- * County of Kern Environmental Health Department
- * City of Bakersfield Fire Department

KINGS COUNTY CUPA:

- * Environmental Health Services

LAKE COUNTY CUPA:

- * Division of Environmental Health

LASSEN COUNTY CUPA:

- * Department of Agriculture

LOS ANGELES COUNTY CUPAS:

- * County of Los Angeles Fire Department CUPA Data as maintained by the Los Angeles County Department of Public Works

- * County of Los Angeles Environmental Programs Division

- * Cities of Burbank, El Segundo, Glendale, Long Beach/Signal Hill, Los Angeles, Pasadena, Santa Fe Springs, Santa Monica, Torrance, Vernon

MADERA COUNTY CUPA:

- * Environmental Health Department

MARIN COUNTY CUPA:

- * County of Marin Office of Waste Management

- * City of San Rafael Fire Department

MARIPOSA COUNTY CUPA:

- * Health Department

MENDOCINO COUNTY CUPA:

- * Environmental Health Department

MERCED COUNTY CUPA:

- * Division of Environmental Health

MODOC COUNTY CUPA:

- * Department of Agriculture

MONO COUNTY CUPA:

- * Health Department

MONTEREY COUNTY CUPA:

- * Environmental Health Division

NAPA COUNTY CUPA:

- * Hazardous Materials Section

NEVADA COUNTY CUPA:

- * Environmental Health Department

ORANGE COUNTY CUPAS:

- * County of Orange Environmental Health Department

- * Cities of Anaheim, Fullerton, Orange, Santa Ana

- * County of Orange Environmental Health Department

PLACER COUNTY CUPAS:

- * County of Placer Division of Environmental Health Field Office

- * Tahoe City

- * City of Roseville Roseville Fire Department

PLUMAS COUNTY CUPA:

- * Environmental Health Department

RIVERSIDE COUNTY CUPA:

- * Environmental Health Department

SACRAMENTO COUNTY CUPA:

- * County Environmental Mgmt Dept, Haz. Mat. Div.

SAN BENITO COUNTY CUPA:

- * City of Hollister Environmental Service Department

SAN BERNARDINO COUNTY CUPAS:

- * County of San Bernardino Fire Department, Haz. Mat. Div.

- * City of Hesperia Hesperia Fire Prevention Department

- * City of Victorville Victorville Fire Department

SAN DIEGO COUNTY CUPA:

- * The San Diego County Dept. of Environmental Health HE 17/58

SAN FRANCISCO COUNTY CUPA:

- * Department of Public Health

SAN JOAQUIN COUNTY CUPA:

- * Environmental Health Division

SAN LUIS OBISPO COUNTY CUPAS:

- * County of San Luis Obispo Environmental Health Division
- * City of San Luis Obispo City Fire Department

SAN MATEO COUNTY CUPA:

- * Environmental Health Department

SANTA BARBARA COUNTY CUPA:

- * County Fire Dept Protective Services Division

SANTA CLARA COUNTY CUPAS:

- * County of Santa Clara Hazardous Materials Compliance Division
- * Santa Clara County Central Fire Protection District (Covers Campbell, Cupertino, Los Gatos, & Morgan Hill)
- * Cities of Gilroy, Milpitas, Mountain View, Palo Alto, San Jose Fire, Santa Clara, Sunnyvale

SANTA CRUZ COUNTY CUPA:

- * Environmental Health Department

SHASTA COUNTY CUPA:

- * Environmental Health Department

SIERRA COUNTY CUPA:

- * Health Department

SISKIYOU COUNTY CUPA:

- * Environmental Health Department

SONOMA COUNTY CUPAS:

- * County of Sonoma Department Of Environmental Health
- * Cities of Healdsburg / Sebastopol, Petaluma, Santa Rosa

STANISLAUS COUNTY CUPA:

- * Department of Environmental Resources Haz. Mat. Division

SUTTER COUNTY CUPA:

- * Department of Agriculture

TEHAMA COUNTY CUPA:

- * Department of Environmental Health

TRINITY COUNTY CUPA:

- * Department of Health

TULARE COUNTY CUPA:

- * Environmental Health Department

TUOLUMNE COUNTY CUPA:

- * Environmental Health

VENTURA COUNTY CUPAS:

- * County of Ventura Environmental Health Division
- * Cities of Oxnard, Ventura

YOLO COUNTY CUPA:

- * Environmental Health Department

YUBA COUNTY CUPA:

Updated quarterly/annually/when available

State/Tribal IC: *CA EPA* The California EPA Department of Toxic Substances Control.

Updated Updated quarterly/annually/when available

State/Tribal VCP: *CA EPA* The California EPA Department of Toxic Substances Control.

Updated Updated quarterly/annually/when available

RADON: *NTIS* Environmental Protection Agency, National Technical Information Services

Updated periodically

State Permits: CA EPA/COUNTY The San Diego County Depart. Of Environmental Health
Phone: (619) 338-2211
San Bernardino County Fire Department

Updated quarterly/when available

State Other: CA EPA/COUNTY The CAL EPA, Depart. Of Toxic Substances Control
Phone: (916) 323-3400
The Los Angeles County Hazardous Materials Division
Phone: (323) 890-7806
Orange County Environmental Health Agency
Phone: (714) 834-3536
Riverside County Department of Environmental Health, Hazardous Materials Management Division
Phone: (951) 358-5055
Sacramento County Environmental Management Department

Updated quarterly/when available

HW Manifest: CA EPA
CAL EPA, Department of Toxic Substances Control

Updated annually/when available

APPENDIX L: VISUAL SIMULATIONS AND RIGHT-OF-WAY CROSS-SECTIONS

1.0 VISUAL SIMULATIONS

Key Observation Point Analysis

A list of key observation points (KOPs) were identified from the list of highly sensitive viewpoints within the visual influence area. The KOPs are all located within the ANF, with the exception of ANF KOP 7, and were selected by ANF personnel. Final KOP locations were identified during a field visits in April and November, 2010. Existing conditions were inventoried and verified for the landscape visible from each preliminary KOP location, including the existing scenic integrity level. Photographs were taken from these KOPs to capture existing conditions. Scenic Integrity Level definitions are listed in Section 4.2.4 of the Visual Resources Technical Report. Refer to Section 4.2.9 for discussion of the visual conditions that would occur as a result of the Project for each of the KOPs. Preliminary KOP locations and descriptions are as follows:

ANF KOP 1 (photo 4) – ANF KOP 1 is located on the road to the trailhead at Oak Flat Campground. The view captured is a panorama to the northeast toward I-5. The location was selected to generally characterize the existing landscape along the Segment D alignment through of the I-5 Corridor Place.

The view encompasses the steep slopes and rounded summits that are dominant landforms within the Place and the ridges that define its boundaries. Vegetation primarily consists of mixed chaparral with scattered large areas of exposed soil at lower elevations. The I-5 corridor is a discordant, linear element that disrupts and otherwise predominantly natural appearing vista. Additionally, existing transmission lines are visible on the ridge top, creating an additional discordant element of vertical lines and angular forms. The interstate and the existing transmission lines create a visual contrast with the natural landscape and diminish the overall scenic integrity of the landscape, resulting in a generally moderate to low scenic integrity level.

The new transmission line would represent a dominant deviation from the landscape character and, with the existing transmission lines, would cumulatively result in altered landscape character with moderate to low character expression. Scenic integrity levels resulting from Alternative 1 would generally be low.

ANF KOP 2 – ANF KOP 2 is located on the Old Ridge Route. The view captured is a panorama to the northwest. The location was selected to generally characterize the existing landscape along the existing electrical transmission corridor and the parallel Segment D alignment. The view is of the Santa Clara Canyons Place near the boundary of the I-5 Corridor Place.

The view encompasses the Old Ridge Route in the immediate foreground with a rounded ridgeline and steep slopes behind it. Vegetation primarily consists of mixed chaparral. Areas of exposed soil are scattered across the slopes. Multiple transmission lines are visible. The lines are parallel to the direction of view and extend up the slope to the ridgeline, where the large, angular structures are skylined. The transmission lines are a dominating, discordant element in the natural landscape and diminish the overall scenic integrity of the landscape. The existing scenic integrity level is generally low.

The new transmission line would represent a dominant deviation from the landscape character and, with the existing transmission lines, would cumulatively result in altered landscape character with moderate to low character expression. Scenic integrity levels resulting from Alternative 1 would generally be low.

ANF KOP 3 – ANF KOP 3 is located on an off road trail. The view captured is a panorama to the east. The location was selected to generally characterize the existing landscape of the Santa Clara Canyons Place and the general landscape around the Segment G alignment.

The view captures the steep slopes and rounded summits that are characteristic of the area. Vegetation generally consists of chaparral and mixed shrubs and grassland. Discordant elements in the landscape include distant transmission lines with structures visible on the ridgetops and skylined in some areas, the Los Angeles Aqueduct, which creates a high contrast due to its light color against the landscape and its linear form, and a road and a trail which create contrast with the landscape due to the contrast of exposed soil and alteration of the natural topography. The existing scenic integrity level is generally moderate to low.

The new transmission line would represent a dominant deviation from the landscape character and, with the existing transmission lines, would cumulatively result in altered landscape character with moderate to low character expression. Scenic integrity levels resulting from Alternative 2 would generally be low.

ANF KOP 4 – ANF KOP 4 is located along San Francisquito Canyon Road. The view is a panorama to the northeast that captures the existing landscape of the Santa Clara Canyons Place and the landscape along the Segment G alignment.

The view encompasses the steep slopes and rounded summits of the area, which are generally vegetated by chaparral, interspersed with small, lighter patches of exposed soil. Discordant elements in the landscape include the Los Angeles Aqueduct. The aqueduct is linear and light in color, creating a contrast with the natural landscape. Existing transmission lines also cross the landscape. The vertical lines and angular forms of the structures and the horizontal lines of the conductors are discordant elements and create contrast with the natural landscape. The existing scenic integrity level is generally moderate to low.

The new transmission line would represent a dominant deviation from the landscape character and, with the existing transmission lines, would cumulatively result in altered landscape character with moderate to low character expression. Scenic integrity levels resulting from Alternative 2 would generally be low.

ANF KOP 5 – ANF KOP 5 is located along San Francisquito Canyon Road. The view is to the southwest and encompasses a steep drop off in the immediate foreground at the edge of the road and the steep slopes and rounded ridgetops of the Santa Clara Canyons Place behind it. The view is of the Segment G alignment. Vegetation consists of chaparral and is generally uniform, blanketing the visible slopes.

Discordant elements in the natural landscape include the roadway, which creates contrasts of color and form with the landscape, and existing transmission lines, which cross the road and extend into the distance. The angular, vertical forms of the structures and the horizontal conductors create contrast with the natural landscape. The existing scenic integrity level is generally moderate to low.

The new transmission line would represent a dominant deviation from the landscape character and, with the existing transmission lines, would cumulatively result in altered landscape character with moderate to low character expression. Scenic integrity levels resulting from Alternative 2 would generally be low.

ANF KOP 6 – ANF KOP 6 is located along the Pacific Crest Trail. The view is a panorama to the northeast that captures the existing landscape of the Santa Clara Canyons Place and the Segment 2A alignment. The view captures the steep slopes and rounded ridgetops of the Place. Vegetation consists of chaparral that blankets the slopes.

Discordant elements in the natural landscape include a roadway and trails. The grading for these elements, the light colored exposed soil, and their linear form contrast with the natural landscape. The existing scenic integrity level is generally high to moderate.

The new transmission line would represent a dominant deviation from the landscape character. Alternative 2a and the existing transmission lines would cumulatively result in altered landscape character, with moderate to low character expression. Where no existing transmission lines would be paralleled, the Alternative would also result in altered landscape character with moderate to low character expression. Scenic integrity levels resulting from the Alternative would generally be low.

ANF KOP 7 – ANF KOP 7 is located along the Sierra Highway near the Agua Dulce Road intersection. The view is to the northeast toward the Segment I alignment and captures the existing landscape of the Soledad Front Country. The view captures the steep slopes and rounded ridgetops of the Place with development scattered on the lower slopes. Vegetation consists of chaparral that blankets the slopes and grassland with scattered shrubs and trees in the developed areas.

Discordant elements in the natural landscape include the roadway, which creates contrast of color and form with the landscape, and existing transmission lines, which are located above the roadway along the hillsides. The angular, vertical forms of the structures and the horizontal conductors create contrast with the natural landscape. Additional contrast is created by the residential development that follows the roadway and the electrical distribution lines along the roadway. The existing scenic integrity level is generally low.

The new transmission line would represent a dominant deviation from the landscape character and, with the existing transmission lines, would cumulatively result in altered landscape character with moderate to low character expression. Scenic integrity levels resulting from the Alternative would generally be low to moderate.

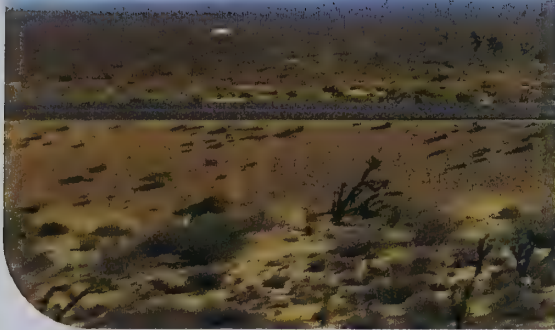
ANF KOP 8 (Photo-Simulation 5) – Additionally, the Photo-Simulation 5 viewpoint described in Section 7.10 of the technical report is located within the ANF. This photo-simulation was completed for the technical report to evaluate the accuracy of the predicted visual impacts, to determine the effectiveness of recommended mitigation, and to illustrate the expected impacts to the concerned agencies and the public. This viewpoint was also described and analyzed for the ANF inventory and analysis.

Photo-Simulation 5 is located along the Pacific Crest National Scenic Trail. The view is to the southwest across San Francisquito Road toward the Segment G alignment. The view captures the steep slopes and rounded ridgetops of the Place. Vegetation consists of chaparral.

Discordant elements in the natural landscape include existing transmission lines and the trail and access road. The structures of the existing transmission lines are vertical and angular and the conductor is linear and horizontal, creating visual contrasts with the natural landscape. The trail and existing access roads have been cut into the hillside, creating both color and form contrasts due to the disruption to the topography, the linear forms and the contrasting exposed soil. The existing scenic integrity is generally low.

The new transmission line would represent a dominant deviation from the landscape character and, with the existing transmission lines, would cumulatively result in altered landscape character with moderate to low character expression. Scenic integrity levels resulting from Alternative 2 would generally be low.

Existing Condition



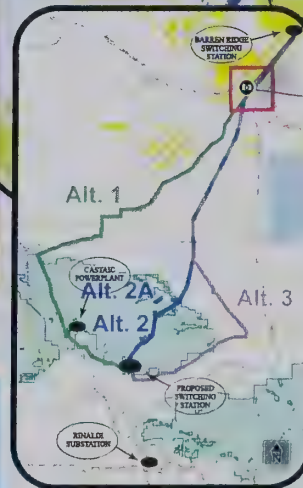
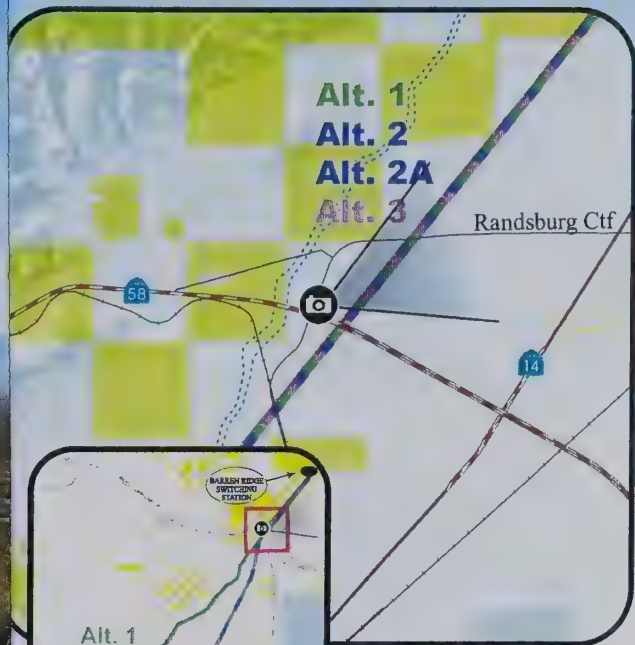
View from the Highway 58 off-ramp north

Simulated Condition



Proposed double circuit 230 kV transmission line

Photo simulation 01 Highway 58



LEGEND

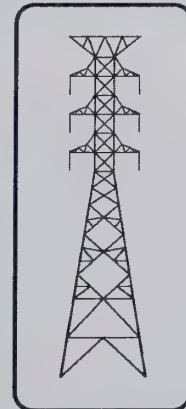
- Existing 69 kV
- Existing 230 kV
- Existing 500 kV

Alternative Routes for 230 kV Transmission Line:

- Alternative 1
- Alternative 2 (Proposed Action)
- Alternative 2a
- Alternative 3



Camera Location Marker



This visual simulation is a representation of the proposed addition of a new double circuit 230 kV transmission line. The tower location and heights may change pending approval of final design and engineering for the Barren Ridge Renewable Transmission Project.



BARREN RIDGE RENEWABLE TRANSMISSION PROJECT

December 17th, 2010

The new transmission line would represent a dominant deviation from the landscape character. Alternative 2a and the existing transmission lines would cumulatively result in altered landscape character, with moderate to low character expression. Where no existing transmission lines would be paralleled, the Alternative would also result in altered landscape character with moderate to low character expression. Scenic integrity levels resulting from the Alternative would generally be low.

ANF KOP 7 – ANF KOP 7 is located along the Sierra Highway near the Agua Dulce Road intersection. The view is to the northeast toward the Segment I alignment and captures the existing landscape of the Soledad Front Country. The view captures the steep slopes and rounded ridgetops of the Place with development scattered on the lower slopes. Vegetation consists of chaparral that blankets the slopes and grassland with scattered shrubs and trees in the developed areas.

Discordant elements in the natural landscape include the roadway, which creates contrast of color and form with the landscape, and existing transmission lines, which are located above the roadway along the hillsides. The angular, vertical forms of the structures and the horizontal conductors create contrast with the natural landscape. Additional contrast is created by the residential development that follows the roadway and the electrical distribution lines along the roadway. The existing scenic integrity level is generally low.

The new transmission line would represent a dominant deviation from the landscape character and, with the existing transmission lines, would cumulatively result in altered landscape character with moderate to low character expression. Scenic integrity levels resulting from the Alternative would generally be low to moderate.

ANF KOP 8 (Photo-Simulation 5) – Additionally, the Photo-Simulation 5 viewpoint described in Section 7.10 of the technical report is located within the ANF. This photo-simulation was completed for the technical report to evaluate the accuracy of the predicted visual impacts, to determine the effectiveness of recommended mitigation, and to illustrate the expected impacts to the concerned agencies and the public. This viewpoint was also described and analyzed for the ANF inventory and analysis.

Photo-Simulation 5 is located along the Pacific Crest National Scenic Trail. The view is to the southwest across San Francisquito Road toward the Segment G alignment. The view captures the steep slopes and rounded ridgetops of the Place. Vegetation consists of chaparral.

Discordant elements in the natural landscape include existing transmission lines and the trail and access road. The structures of the existing transmission lines are vertical and angular and the conductor is linear and horizontal, creating visual contrasts with the natural landscape. The trail and existing access roads have been cut into the hillside, creating both color and form contrasts due to the disruption to the topography, the linear forms and the contrasting exposed soil. The existing scenic integrity is generally low.

The new transmission line would represent a dominant deviation from the landscape character and, with the existing transmission lines, would cumulatively result in altered landscape character with moderate to low character expression. Scenic integrity levels resulting from Alternative 2 would generally be low.

Existing Condition



View from the Highway 58 off-ramp northeast toward the existing transmission lines.

Simulated Condition



Proposed double circuit 230 kV transmission line paralleling the existing transmission lines.

Photo simulation 01
Highway 58



This visual simulation is a representation of the proposed addition of a new double circuit 230 kV transmission line. The tower location and heights may change pending approval of final design and engineering for the Barren Ridge Renewable Transmission Project.



BARREN RIDGE RENEWABLE TRANSMISSION PROJECT

December 17th, 2010

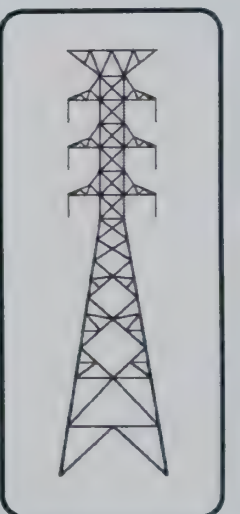
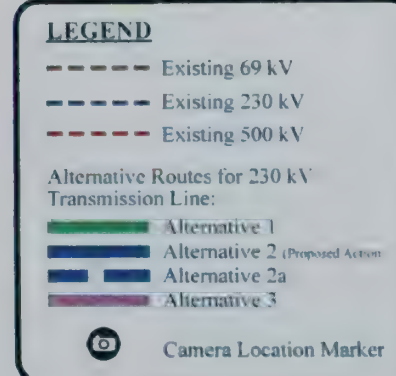
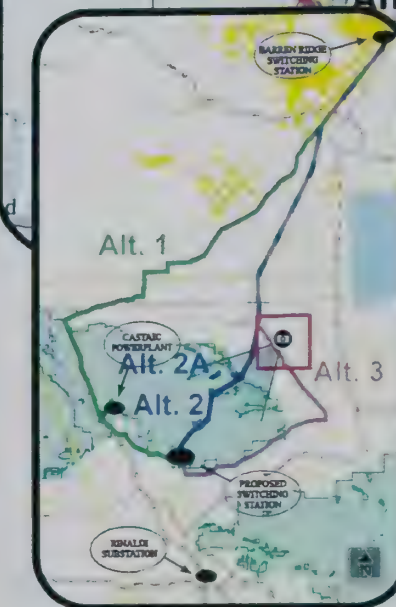


View southwest toward the existing transmission lines from the intersection of West Avenue I and 90th Street in the Antelope Acres community



Proposed double circuit 230 kV transmission line paralleling the existing transmission lines.

Photo simulation 03
Antelope Acres



This visual simulation is a representation of the proposed addition of a new double circuit 230 kV transmission line. The tower location and heights may change pending approval of final design and engineering for the Barren Ridge Renewable Transmission Project.



BARREN RIDGE RENEWABLE TRANSMISSION PROJECT

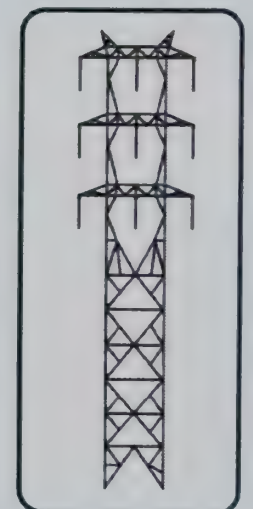
December 17th, 2010

Existing Condition



View from Littlehorn Drive southwest toward the existing transmission lines in a residential area off Johnson Road.

Photo simulation 04
Elizabeth Lake Area



LEGEND

- Existing 69 kV
- Existing 230 kV
- Existing 500 kV

Alternative Routes for 230 kV Transmission Line:

- Alternative 1
- Alternative 2 (Proposed Action)
- Alternative 2a
- Alternative 3

Camera Location Marker

This visual simulation is only a representation of the proposed new triple circuit transmission structures carrying an existing 230 kV circuit and two new 230 kV circuits. The tower location and heights may change pending approval of final design and engineering for the Barren Ridge Renewable Transmission Project.



BARREN RIDGE RENEWABLE TRANSMISSION PROJECT

December 17th, 2010

Simulated Condition



Proposed triple circuit 230 kV transmission line paralleling the existing transmission lines.



Existing Condition

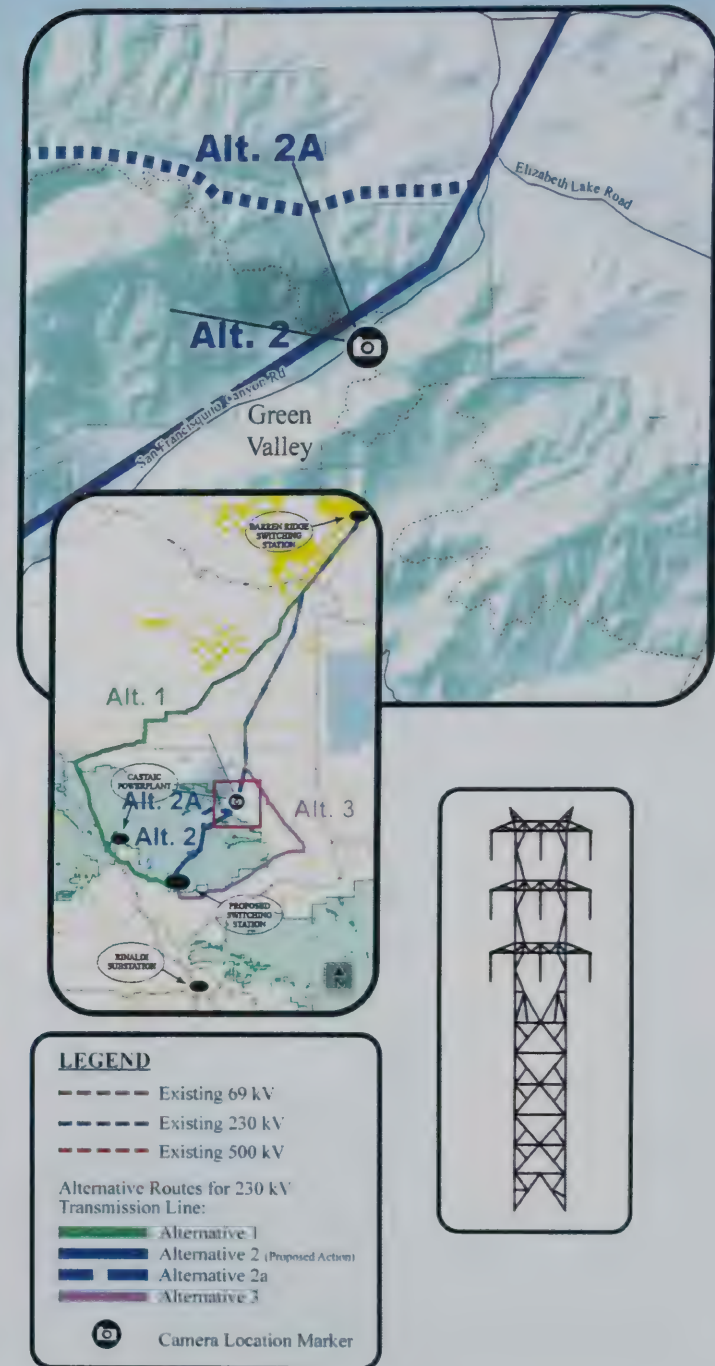
View northwest from the Pacific Crest Trail across San Francisco Road toward the existing transmission lines.



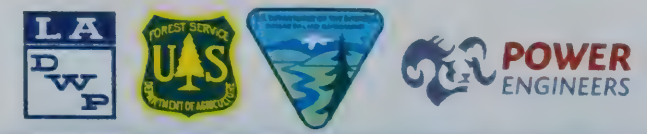
Simulated Condition

Proposed triple circuit 230 kV transmission line paralleling the existing transmission lines.

Photo simulation 05
Pacific Crest Trail



This visual simulation is only a representation of the proposed new triple circuit transmission structures carrying an existing 230 kV circuit and two new 230 kV circuits. The tower location and heights may change pending approval of final design and engineering for the Barren Ridge Renewable Transmission Project.



Existing Condition



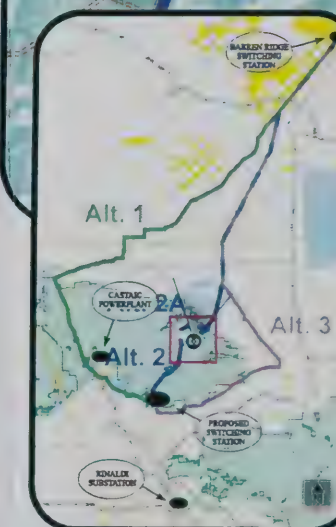
View from the east side of San Francisquito Canyon Road toward the existing transmission lines in the community of Green Valley.

Simulated Condition



Proposed triple circuit 230 kV transmission line northwest of the existing transmission lines.

Photo simulation 06
San Francisquito Canyon Road



LEGEND

- Existing 69 kV
- Existing 230 kV
- Existing 500 kV

Alternative Routes for 230 kV Transmission Line:

- Alternative 1
- Alternative 2 (Proposed Action)
- Alternative 2a
- Alternative 3



Camera Location Marker

This visual simulation is only a representation of the proposed new triple circuit transmission structures carrying an existing 230 kV circuit and two new 230 kV circuits. The tower location and heights may change pending approval of final design and engineering for the Barren Ridge Renewable Transmission Project.



BARREN RIDGE RENEWABLE TRANSMISSION PROJECT

December 17th, 2010

Photo simulation 09
Sierra Highway and Davenport Road



View north from the Sierra Highway and Davenport Road intersection toward the existing LADWP 500 kV transmission lines.

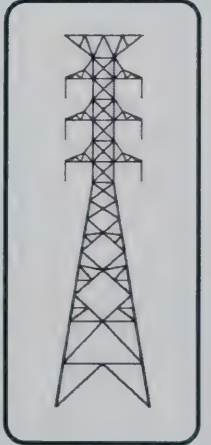


Proposed double circuit 230 kV transmission line paralleling the existing LADWP 500 kV transmission lines.



LEGEND

- Existing 69 kV
- Existing 230 kV
- Existing 500 kV
- Alternative Routes for 230 kV Transmission Line:
 - Alternative 1
 - Alternative 2 (Proposed Action)
 - Alternative 2a
 - Alternative 3
- Camera Location Marker



This visual simulation is a representation of the proposed addition of a new double circuit 230 kV transmission line. The tower location and heights may change pending approval of final design and engineering for the Barren Ridge Renewable Transmission Project.



BARREN RIDGE RENEWABLE TRANSMISSION PROJECT

December 17th, 2010



View northeast from the corner of the Sierra Highway and Agua Dulce Canyon Road toward the existing LADWP 500 kV transmission lines.



Proposed double circuit 230 kV transmission line paralleling the existing LADWP 500 kV transmission lines.

Photo simulation 10
Sierra Highway and Agua Dulce Canyon Road



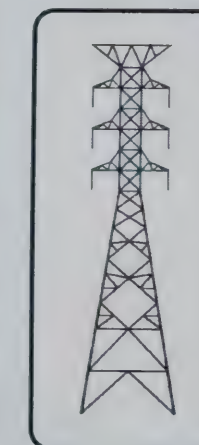
LEGEND

- Existing 69 kV
- Existing 230 kV
- Existing 500 kV

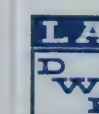
Alternative Routes for 230 kV Transmission Line:

- Alternative 1
- Alternative 2 (Proposed Action)
- Alternative 2a
- Alternative 3

Camera Location Marker



This visual simulation is a representation of the proposed addition of a new double circuit 230 kV transmission line. The tower location and heights may change pending approval of final design and engineering for the Barren Ridge Renewable Transmission Project.



BARREN RIDGE RENEWABLE TRANSMISSION PROJECT

December 17th, 2010

Existing Condition



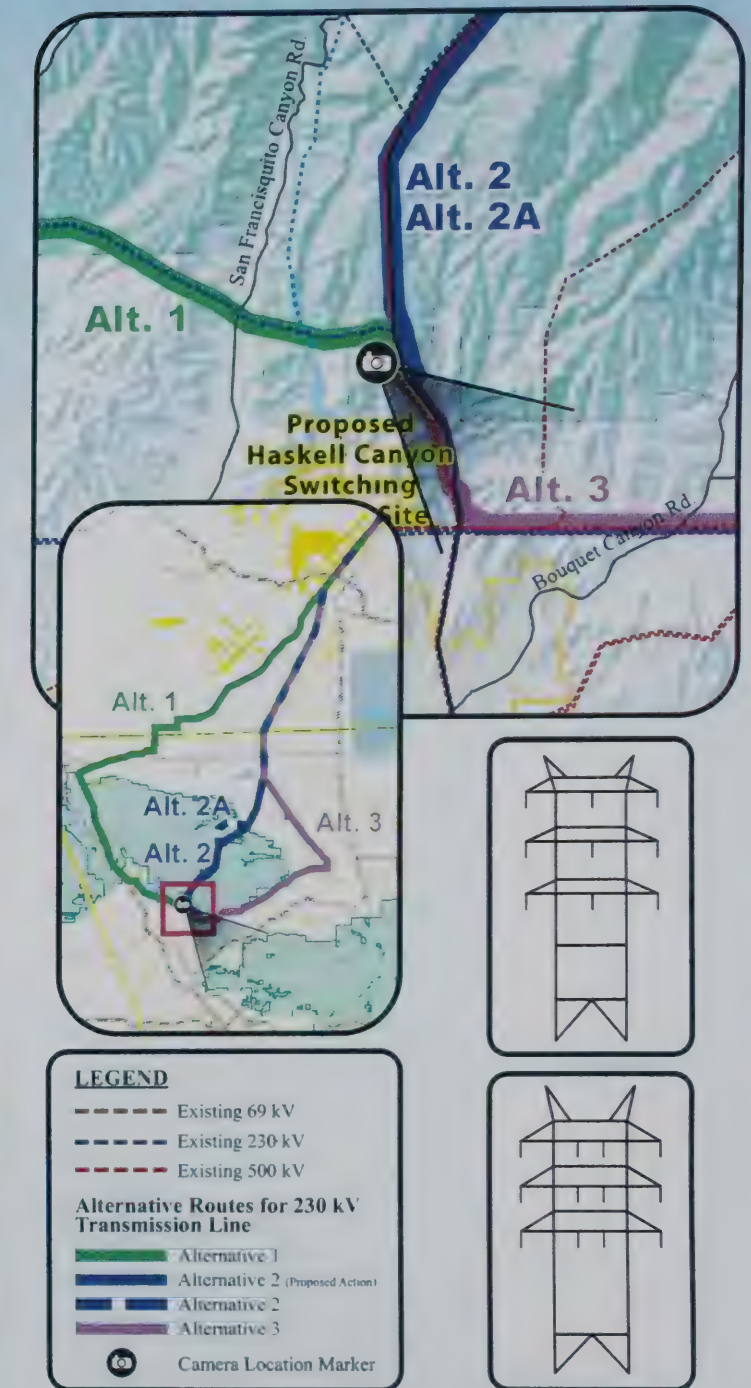
View southeast from City Highline Motorway Fire Road/Forest Service Route 6N21 north of Pettinger Canyon Road toward existing LADWP transmission lines.

Simulated Condition



Proposed Haskell Canyon Switching Station.

Photo simulation 11
Haskell Canyon Switching Station



This visual simulation is a representation of the proposed Haskell Canyon Switching Station and the addition of new transmission lines. The tower location and heights may change pending approval of final design and engineering for the Barren Ridge Renewable Transmission Project.



BARREN RIDGE RENEWABLE TRANSMISSION PROJECT

January 27th, 2011

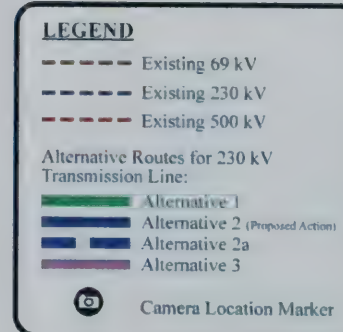
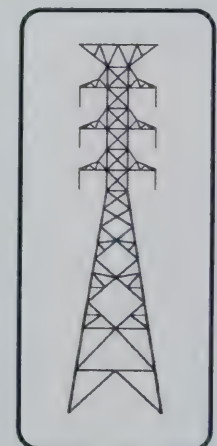
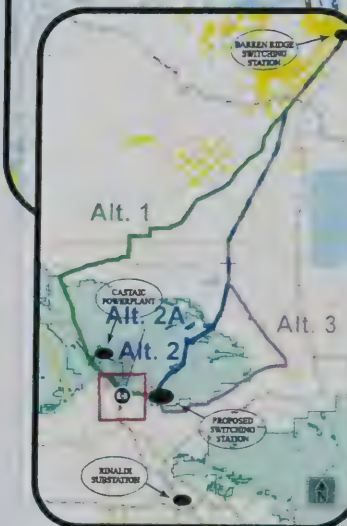


View north from a dock on the eastern shore of Castaic Lagoon toward the dam and existing double circuit LADWP 230 kV transmission lines.



Proposed double circuit 230 kV transmission line paralleling the existing double circuit LADWP 230 kV transmission lines.

Photo simulation 12
Castaic Lake



This visual simulation is a representation of the proposed addition of a new double circuit 230 kV transmission line. The tower location and heights may change pending approval of final design and engineering for the Barren Ridge Renewable Transmission Project.



BARREN RIDGE RENEWABLE TRANSMISSION PROJECT

December 17th, 2010

Existing Condition

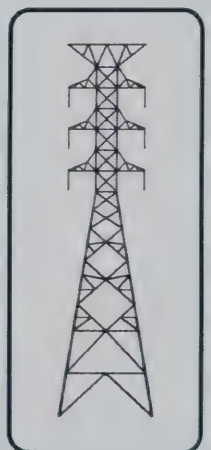
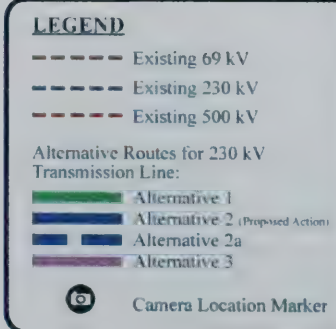
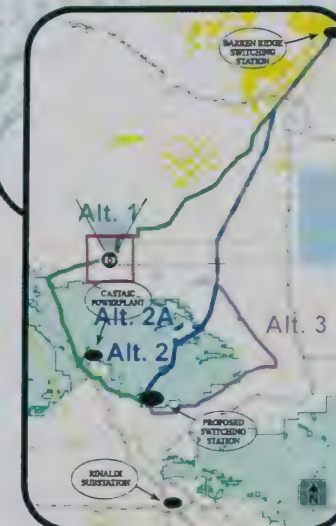


View north from the Pacific Crest Trail at the California Aqueduct and 270th Street.



Proposed double circuit 230 kV transmission line.

Photo simulation 13 Pacific Crest Trail



This visual simulation is a representation of the proposed addition of a new double circuit 230 kV transmission line. The tower location and heights may change pending approval of final design and engineering for the Barren Ridge Renewable Transmission Project.



BARREN RIDGE RENEWABLE TRANSMISSION PROJECT

December 17th, 2010

Photo simulation 14
Lancaster Road

Existing Condition

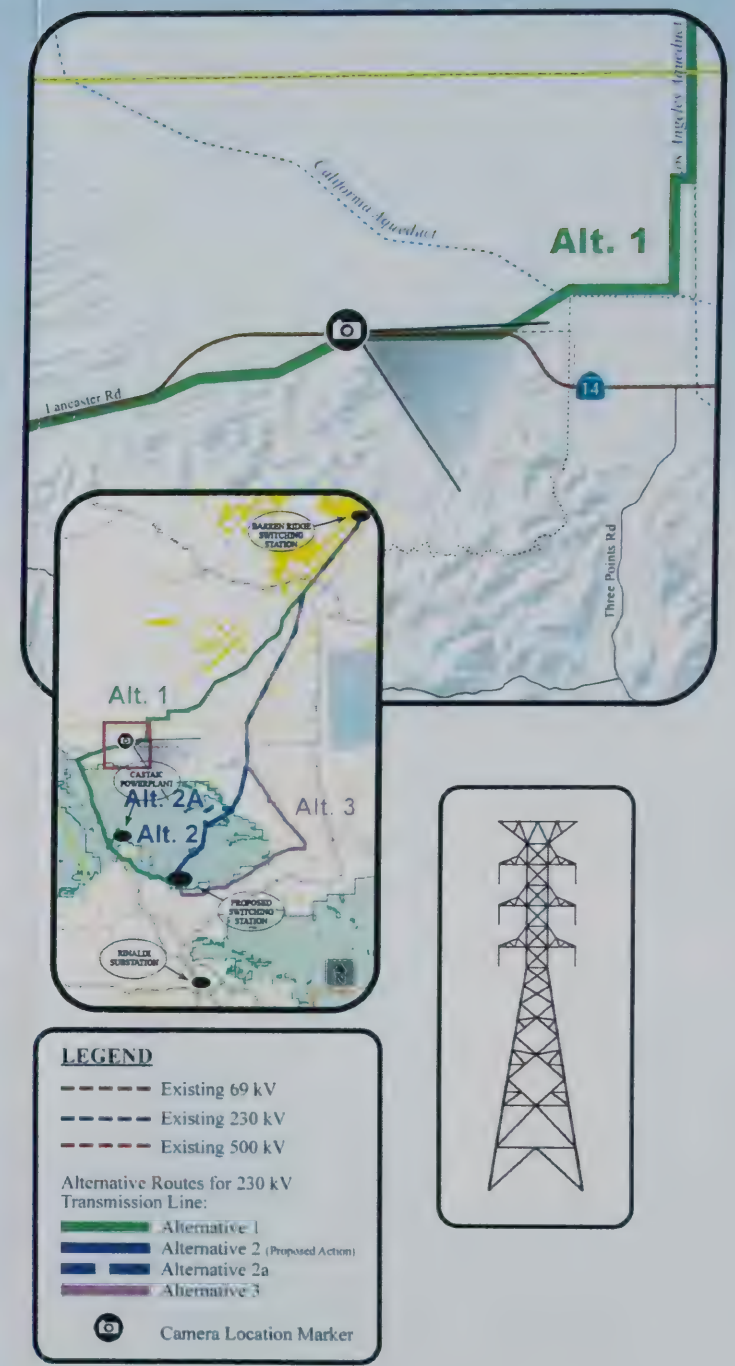


View east from Highway 138 (Lancaster Road) at 290th Street.

Simulated Condition



Proposed double circuit 230 kV transmission line.



This visual simulation is a representation of the proposed addition of a new double circuit 230 kV transmission line. The tower location and heights may change pending approval of final design and engineering for the Barren Ridge Renewable Transmission Project.



BARREN RIDGE RENEWABLE TRANSMISSION PROJECT

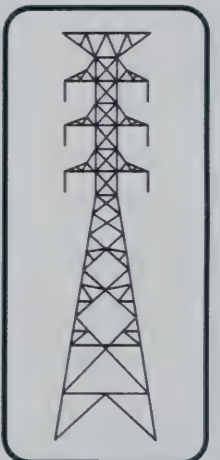
December 17th, 2010

Existing Condition



View northeast toward existing transmission lines from the road to the trailhead at Oak Flat Campground.

Photo simulation ANF Viewpoint of High Concern 1 Oak Flat Campground Road



LEGEND	
---	Existing 69 kV
---	Existing 230 kV
---	Existing 500 kV
Alternative Routes for 230 kV Transmission Line	
---	Alternative 1
---	Alternative 2 (Proposed Action)
---	Alternative 2
---	Alternative 3
ⓐ	Camera Location Marker

This visual simulation is a representation of the proposed addition of a new double circuit 230 kV transmission line. The tower location and heights may change pending approval of final design and engineering for the Barren Ridge Renewable Transmission Project.



BARREN RIDGE RENEWABLE TRANSMISSION PROJECT

April, 7th 2011

Simulated Condition

(With Mitigation VIS-9 Darkened Structure Treatment)



Proposed double circuit 230 kV transmission line paralleling existing transmission lines. Interstate 5 is in the foreground.

Existing Condition



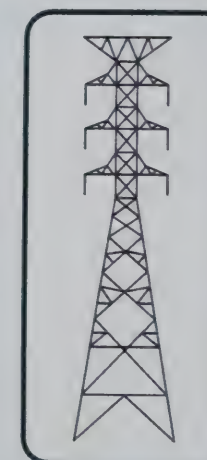
View northeast toward existing transmission lines from the road to the trailhead at Oak Flat Campground.

Simulated Condition (Without Mitigation)



Proposed double circuit 230 kV transmission line paralleling existing transmission lines. Interstate 5 is in the foreground.

Photo simulation ANF Viewpoint of High Concern 1



LEGEND	
---	Existing 69 kV
---	Existing 230 kV
---	Existing 500 kV
Alternative Routes for 230 kV Transmission Line	
---	Alternative 1
---	Alternative 2 (Proposed Action)
---	Alternative 2
---	Alternative 3
📍	Camera Location Marker

This visual simulation is a representation of the proposed addition of a new double circuit 230 kV transmission line. The tower location and heights may change pending approval of final design and engineering for the Barren Ridge Renewable Transmission Project.



BARREN RIDGE RENEWABLE TRANSMISSION PROJECT

April, 7th 2011

Existing Condition



View northwest toward existing transmission lines from the Old Ridge Route Road.

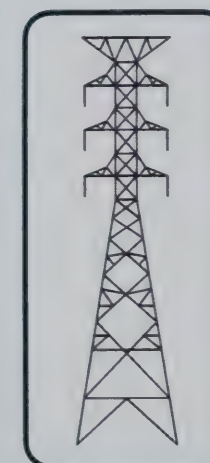
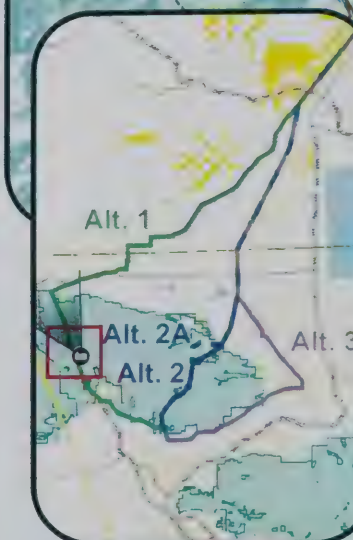
Simulated Condition

(With Mitigation VIS-9 Darkened Structure Treatment)



Proposed double circuit 230 kV transmission line paralleling existing transmission lines.

Photo simulation ANF Viewpoint of High Concern 2 Old Ridge Route



LEGEND	
---	Existing 69 kV
---	Existing 230 kV
---	Existing 500 kV
Alternative Routes for 230 kV Transmission Line	
---	Alternative 1
---	Alternative 2 (Proposed Action)
---	Alternative 2
---	Alternative 3
●	Camera Location Marker

This visual simulation is a representation of the proposed addition of a new double circuit 230 kV transmission line. The tower location and heights may change pending approval of final design and engineering for the Barren Ridge Renewable Transmission Project.



BARREN RIDGE RENEWABLE TRANSMISSION PROJECT

April, 7th 2011

Existing Condition



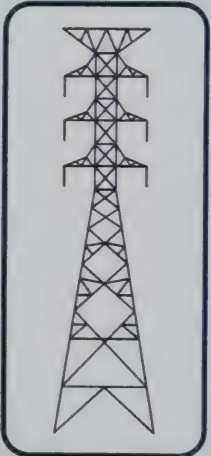
View northwest toward existing transmission lines from the Old Ridge Route Road.

Simulated Condition (Without Mitigation)



Proposed double circuit 230 kV transmission line paralleling existing transmission lines.

Photo simulation ANF Viewpoint of High Concern 2 Old Ridge Route



LEGEND	
---	Existing 69 kV
---	Existing 230 kV
---	Existing 500 kV
Alternative Routes for 230 kV Transmission Line	
---	Alternative 1
---	Alternative 2 (Proposed Action)
---	Alternative 2
---	Alternative 3
	Camera Location Marker

This visual simulation is a representation of the proposed addition of a new double circuit 230 kV transmission line. The tower location and heights may change pending approval of final design and engineering for the Barren Ridge Renewable Transmission Project.



Existing Condition



View southeast from an off road trail toward existing transmission lines.

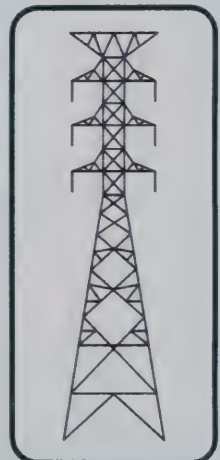
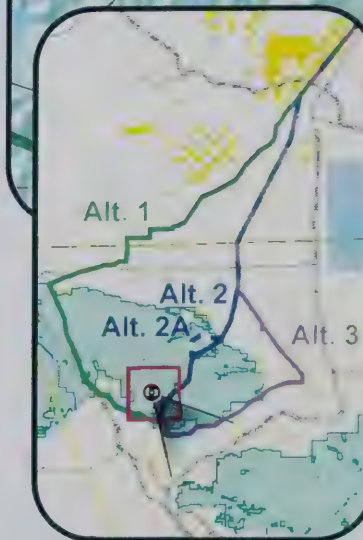
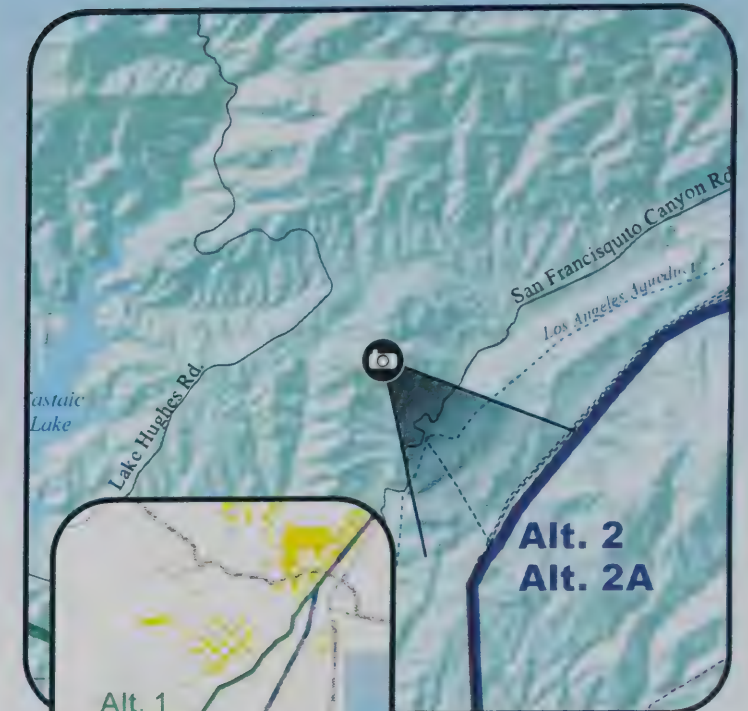
Simulated Condition

(With Mitigation VIS-9 Darkened Structure Treatment)



Proposed double circuit 230 kV transmission line paralleling existing transmission lines.

Photo simulation ANF Viewpoint of High Concern 3 South of Castaic Lake



LEGEND	
---	Existing 69 kV
---	Existing 230 kV
---	Existing 500 kV
Alternative Routes for 230 kV Transmission Line	
---	Alternative 1
---	Alternative 2 (Proposed Action)
---	Alternative 2
---	Alternative 3
📷	Camera Location Marker

This visual simulation is a representation of the proposed addition of a new double circuit 230 kV transmission line. The tower location and heights may change pending approval of final design and engineering for the Barren Ridge Renewable Transmission Project.



BARREN RIDGE RENEWABLE TRANSMISSION PROJECT

April, 7th 2011

Existing Condition



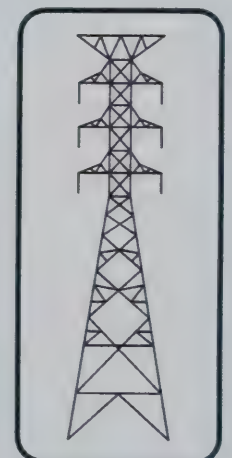
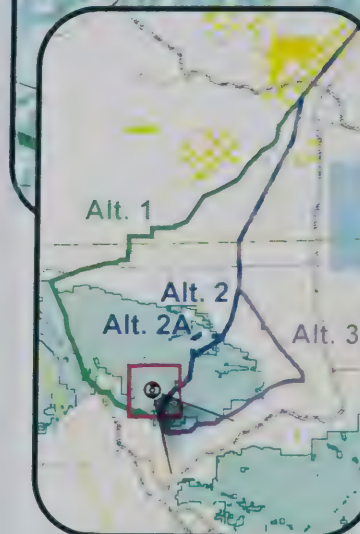
View southeast from an off road trail toward existing transmission lines.

Simulated Condition (Without Mitigation)



Proposed double circuit 230 kV transmission line paralleling existing transmission lines.

Photo simulation ANF Viewpoint of High Concern 3 South of Castaic Lake



LEGEND	
---	Existing 69 kV
---	Existing 230 kV
---	Existing 500 kV
Alternative Routes for 230 kV Transmission Line	
---	Alternative 1
---	Alternative 2 (Proposed Action)
---	Alternative 2
---	Alternative 3
📍	Camera Location Marker

This visual simulation is a representation of the proposed addition of a new double circuit 230 kV transmission line. The tower location and heights may change pending approval of final design and engineering for the Barren Ridge Renewable Transmission Project.



BARREN RIDGE RENEWABLE TRANSMISSION PROJECT

April, 7th 2011

Existing Condition



View northeast from San Francisquito Canyon Road toward existing transmission lines.

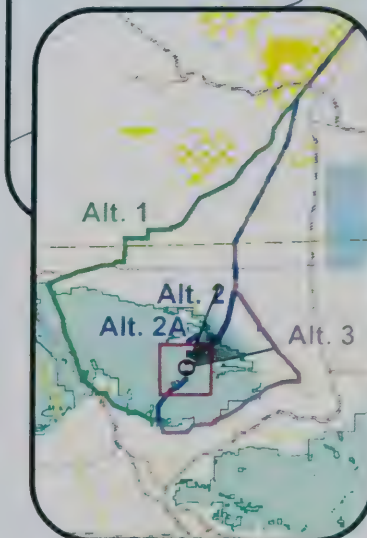
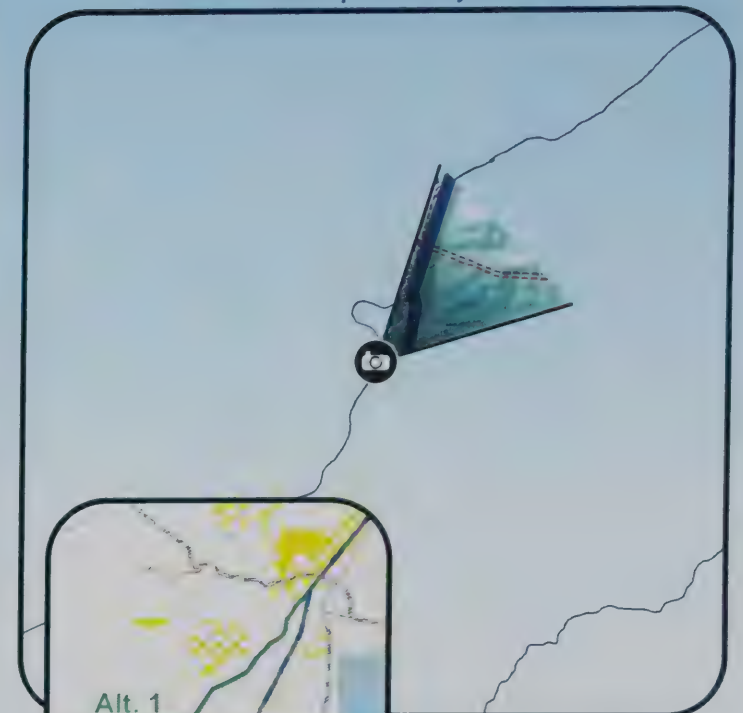
Simulated Condition

(With Mitigation VIS-9 Darkened Structure Treatment)



Proposed triple circuit 230 kV transmission line carrying an existing 230 kV circuit and two new 230 kV circuits.

Photo simulation ANF Viewpoint of High Concern 4 San Francisquito Canyon Road



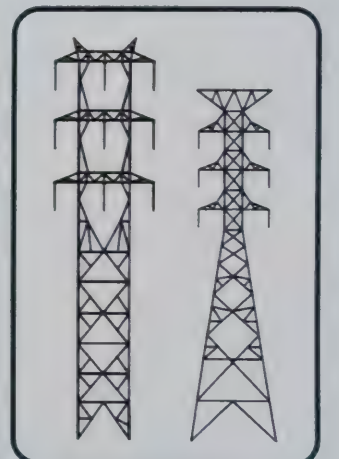
LEGEND

- Existing 69 kV
- Existing 230 kV
- Existing 500 kV

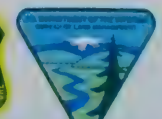
Alternative Routes for 230 kV Transmission Line

- Alternative 1
- Alternative 2 (Proposed Action)
- Alternative 2
- Alternative 3

Camera Location Marker



This visual simulation is only a representation of the proposed new transmission structures. Proposed structures include new triple circuit transmission structures carrying an existing 230 kV circuit and two new 230 kV circuits and new double circuit 230 kV transmission structures. The tower location and heights may change pending approval of final design and engineering for the Barren Ridge Renewable Transmission Project.



BARREN RIDGE RENEWABLE TRANSMISSION PROJECT

April, 7th 2011

Photo simulation ANF
Viewpoint of High Concern 4
San Francisquito Canyon Road

Existing Condition

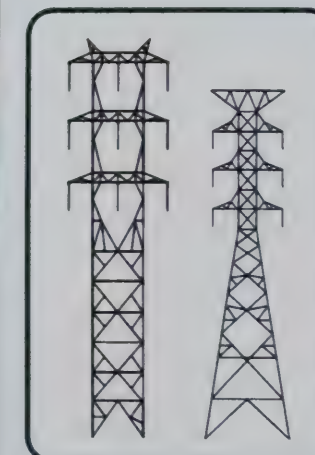
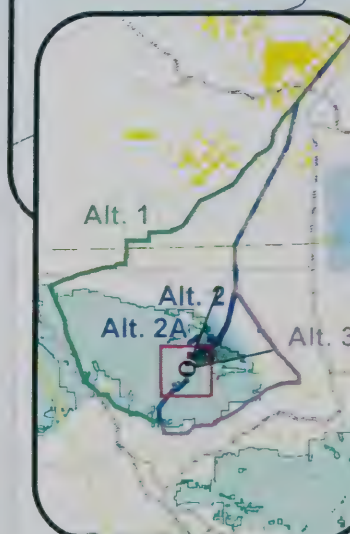


View northeast from San Francisquito Canyon Road toward existing transmission lines.

Simulated Condition
(Without Mitigation)



Proposed triple circuit 230 kV transmission line carrying an existing 230 kV circuit and two new 230 kV circuits.



LEGEND

---	Existing 69 kV
---	Existing 230 kV
---	Existing 500 kV
Alternative Routes for 230 kV Transmission Line	
---	Alternative 1
---	Alternative 2 (Proposed Action)
---	Alternative 2
---	Alternative 3
ⓐ	Camera Location Marker

This visual simulation is only a representation of the proposed new transmission structures. Proposed structures include new triple circuit transmission structures carrying an existing 230 kV circuit and two new 230 kV circuits and new double circuit 230 kV transmission structures. The tower location and heights may change pending approval of final design and engineering for the Barren Ridge Renewable Transmission Project.



BARREN RIDGE RENEWABLE TRANSMISSION PROJECT

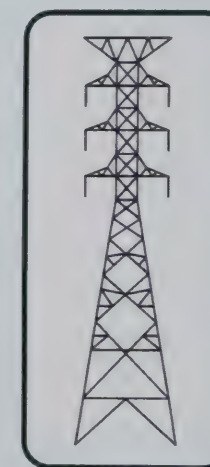
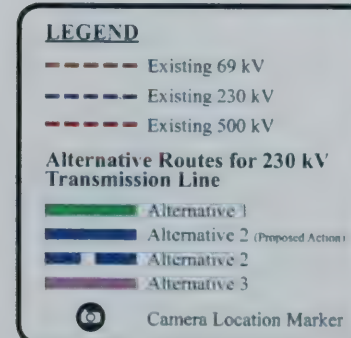
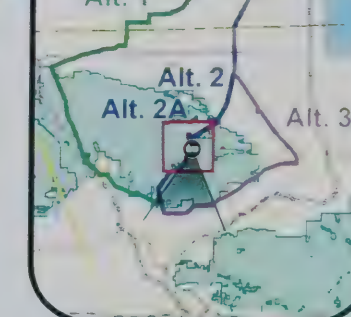
April, 7th 2011

Existing Condition



View south from San Francisquito Canyon Road toward existing transmission lines.

Photo simulation ANF Viewpoint of High Concern San Francisquito Canyon Road



This visual simulation is a representation of the proposed addition of a new double circuit 230 kV transmission line. The tower location and heights may change pending approval of final design and engineering for the Barren Ridge Renewable Transmission Project.



BARREN RIDGE RENEWABLE TRANSMISSION PROJECT

April, 7th 2011

Simulated Condition (With Mitigation VIS-9 Darkened Structure Treatment)



Proposed double circuit 230 kV transmission line paralleling existing transmission lines.

Existing Condition



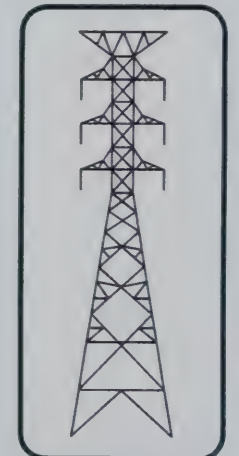
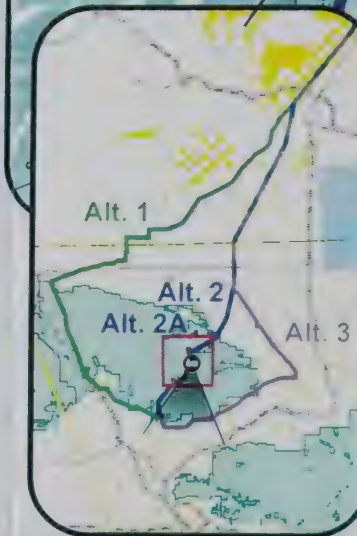
View south from San Francisquito Canyon Road toward existing transmission lines.

Simulated Condition (Without Mitigation)



Proposed double circuit 230 kV transmission line paralleling existing transmission lines.

Photo simulation ANF Viewpoint of High Concern 5 San Francisquito Canyon Road



LEGEND

- Existing 69 kV
- Existing 230 kV
- Existing 500 kV

Alternative Routes for 230 kV Transmission Line

- Alternative 1
- Alternative 2 (Proposed Action)
- Alternative 2
- Alternative 3

Camera Location Marker

This visual simulation is a representation of the proposed addition of a new double circuit 230 kV transmission line. The tower location and heights may change pending approval of final design and engineering for the Barren Ridge Renewable Transmission Project.



BARREN RIDGE RENEWABLE TRANSMISSION PROJECT

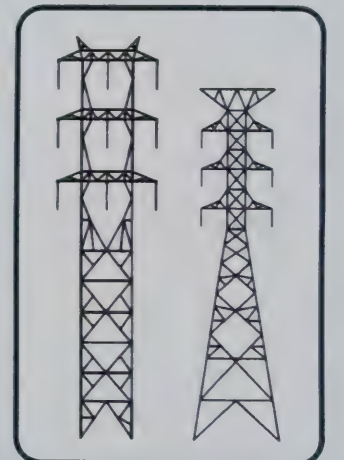
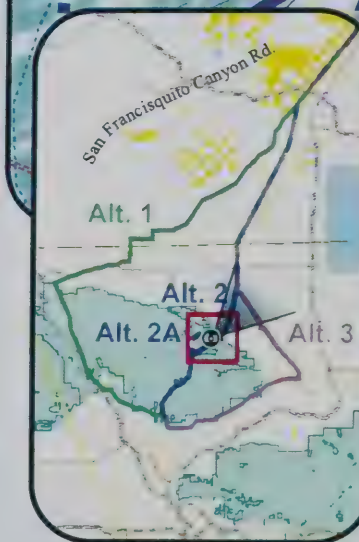
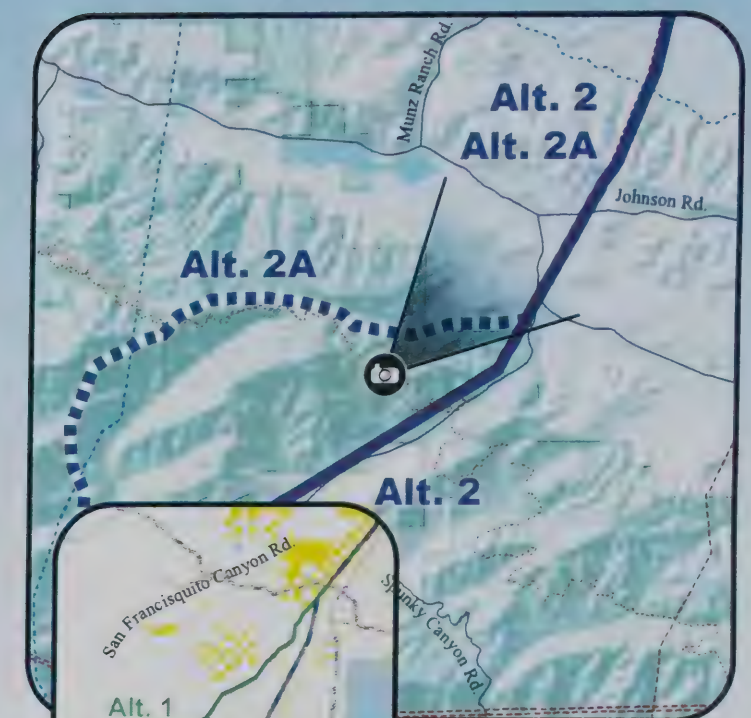
April, 7th 2011

Existing Condition



View northeast from the Pacific Crest Trail.

Photo simulation ANF Viewpoint of High Concern 6 Pacific Crest Trail



LEGEND	
---	Existing 69 kV
---	Existing 230 kV
---	Existing 500 kV
Alternative Routes for 230 kV Transmission Line	
---	Alternative 1
---	Alternative 2 (Proposed Action)
---	Alternative 3
📷	Camera Location Marker

This visual simulation is only a representation of the proposed new transmission structures. Proposed structures include new triple circuit transmission structures carrying an existing 230 kV circuit and two new 230 kV circuits and new double circuit 230 kV transmission structures. The tower location and heights may change pending approval of final design and engineering for the Barren Ridge Renewable Transmission Project.



BARREN RIDGE RENEWABLE TRANSMISSION PROJECT

April, 7th 2011

Simulated Condition

(With Mitigation VIS-9 Darkened Structure Treatment)



Proposed double circuit 230 kV transmission line.

Existing Condition



View northeast from the Pacific Crest Trail.

Simulated Condition (Without Mitigation)



Proposed double circuit 230 kV transmission line.

Photo simulation ANF Viewpoint of High Concern 6 Pacific Crest Trail



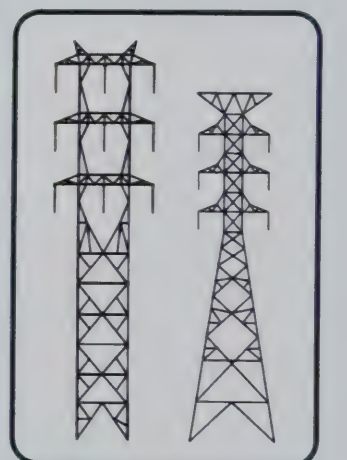
LEGEND

- Existing 69 kV
- Existing 230 kV
- Existing 500 kV

Alternative Routes for 230 kV Transmission Line

- Alternative 1
- Alternative 2 (Proposed Action)
- Alternative 2
- Alternative 3

Camera Location Marker



This visual simulation is only a representation of the proposed new transmission structures. Proposed structures include new triple circuit transmission structures carrying an existing 230 kV circuit and two new 230 kV circuits and new double circuit 230 kV transmission structures. The tower location and heights may change pending approval of final design and engineering for the Barren Ridge Renewable Transmission Project.

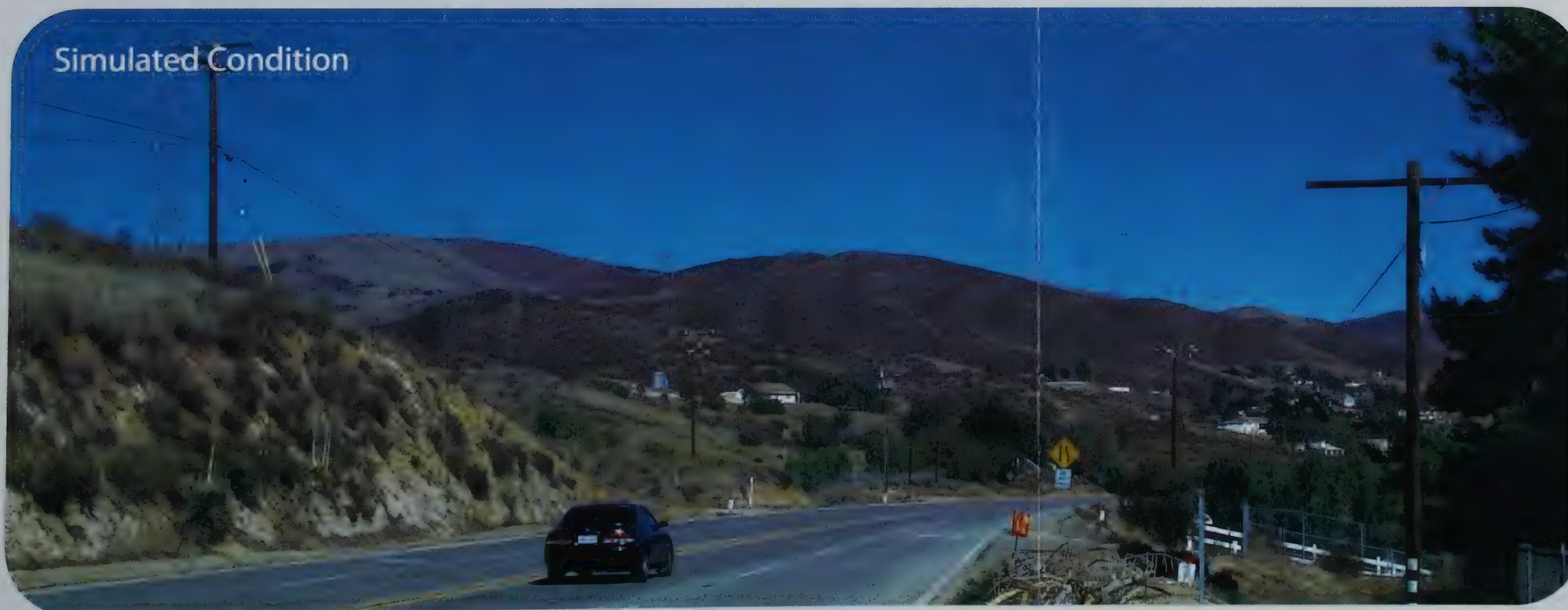


BARREN RIDGE RENEWABLE TRANSMISSION PROJECT

April, 7th 2011

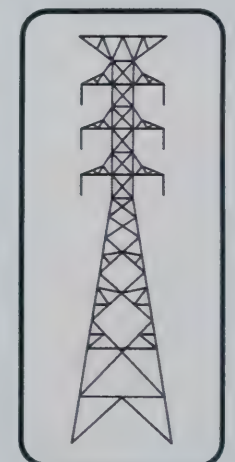
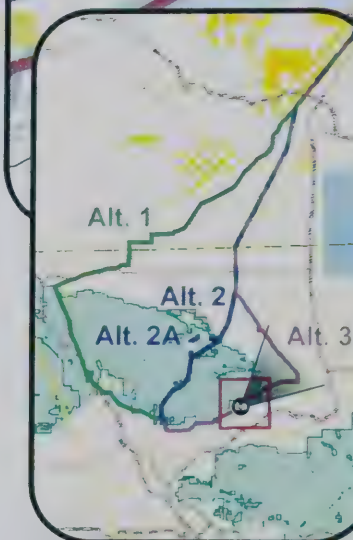


View northeast from the Sierra Highway near the Agua Dulce Road intersection toward existing transmission lines.



Proposed double circuit 230 kV transmission line paralleling existing transmission lines.

Photo simulation ANF
Viewpoint of High Concern 7
Sierra Highway



LEGEND	
	Existing 69 kV
	Existing 230 kV
	Existing 500 kV
Alternative Routes for 230 kV Transmission Line	
	Alternative 1
	Alternative 2 (Proposed Action)
	Alternative 2
	Alternative 3
	Camera Location Marker

This visual simulation is a representation of the proposed addition of a new double circuit 230 kV transmission line. The tower location and heights may change pending approval of final design and engineering for the Barren Ridge Renewable Transmission Project.



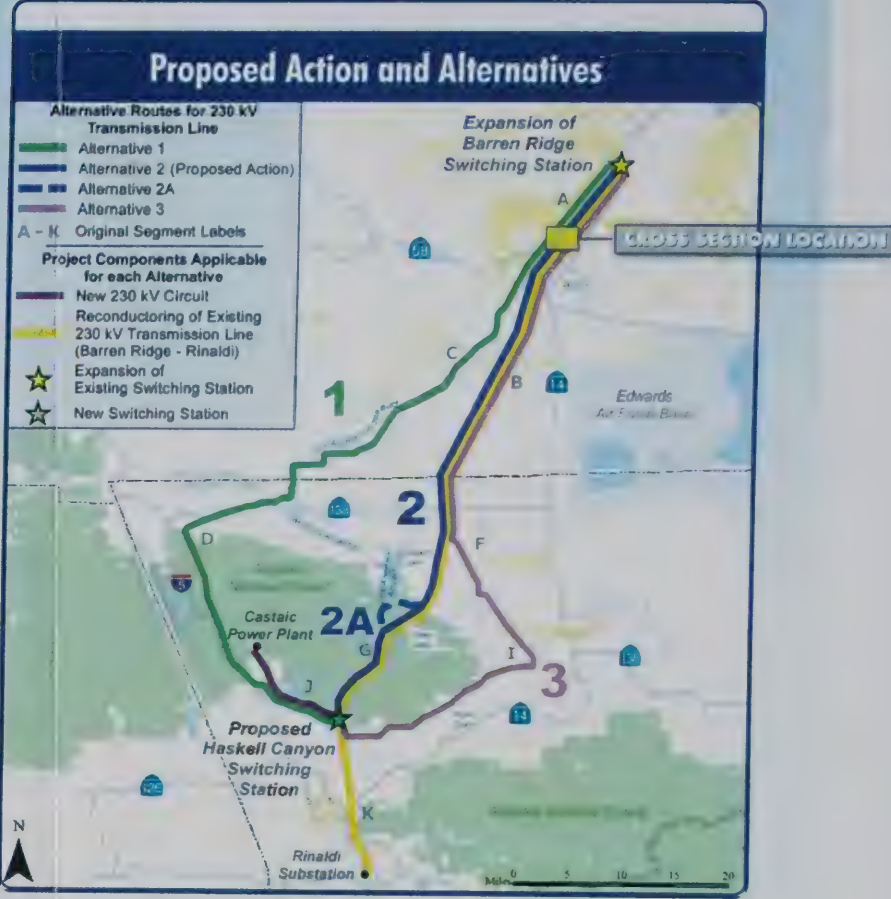
BARREN RIDGE RENEWABLE TRANSMISSION PROJECT

April, 7th 2011

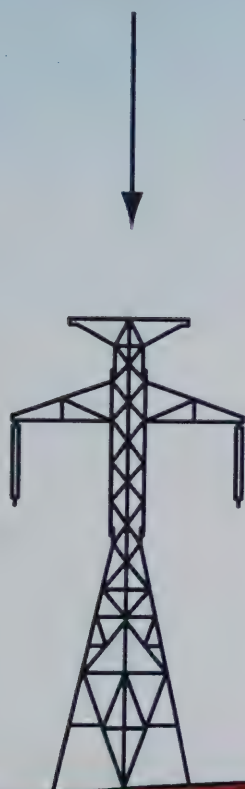
2.0 RIGHT-OF-WAY CROSS-SECTIONS

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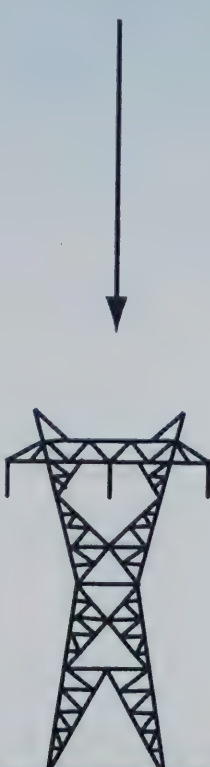
CROSS SECTION A ALTERNATIVES 1, 2, 2a AND 3



EXISTING:
500kV



EXISTING:
230kV



PROPOSED:
BRRTP 230kV



200' EXISTING R.O.W.

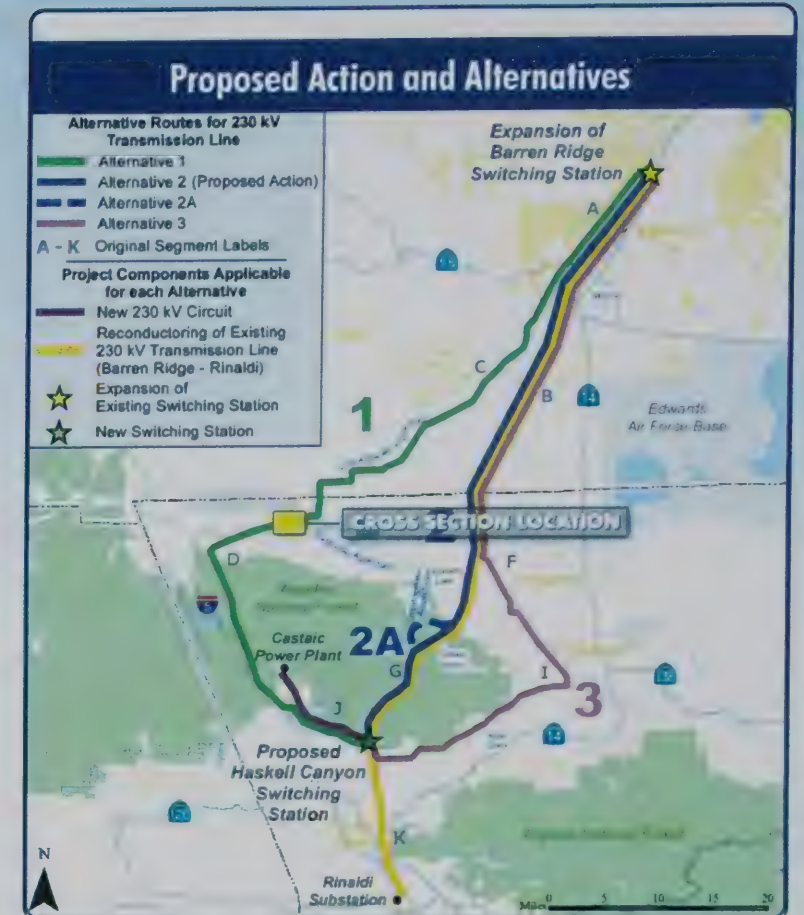
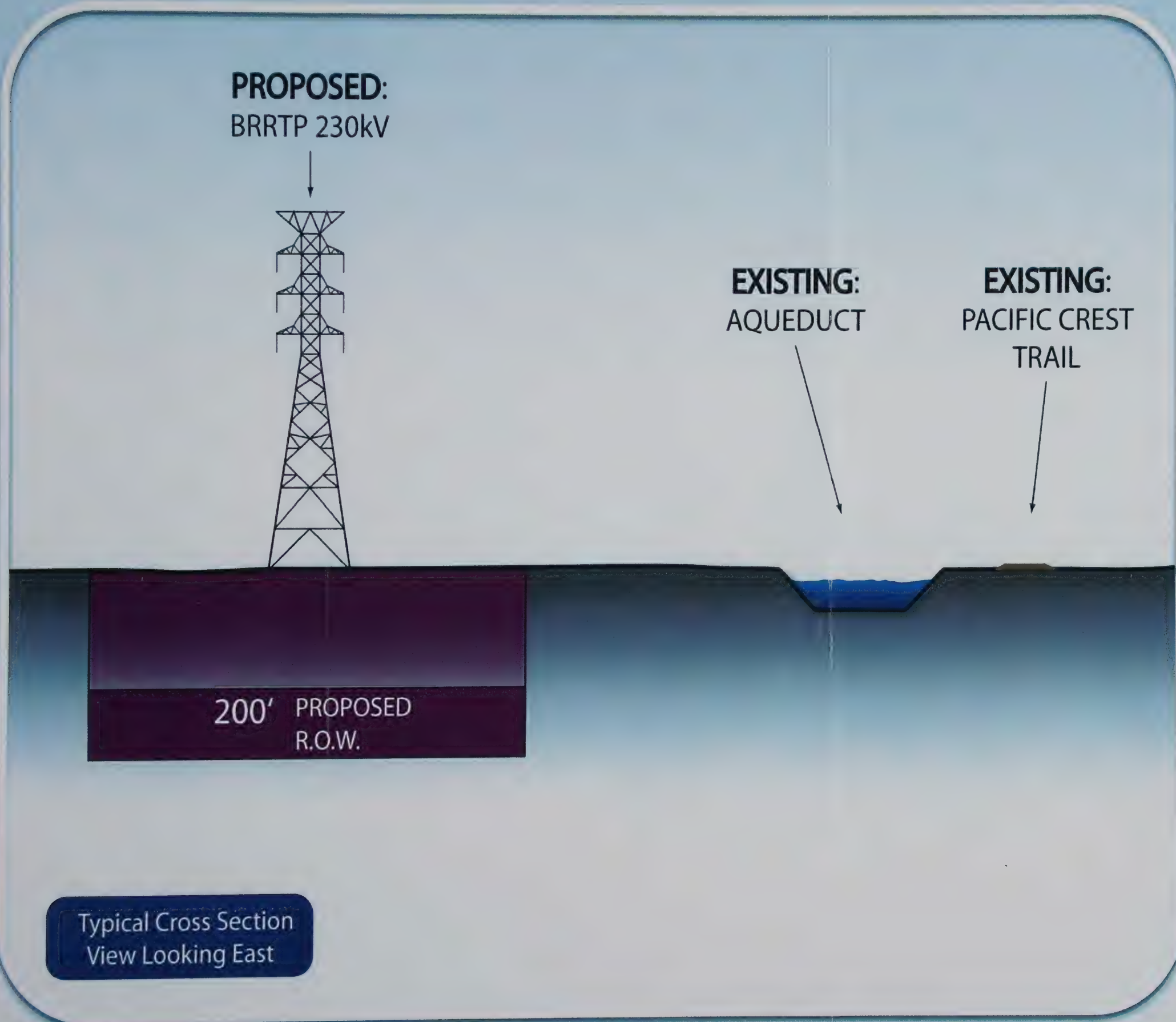
200' PROPOSED R.O.W.

Typical Cross Section
View Looking North

Cross Sections and maps are for review purposes only. Project may change pending public and regulatory review.



CROSS SECTION B ALTERNATIVE 1



Cross Sections and maps are for review purposes only. Project may change pending public and regulatory review.

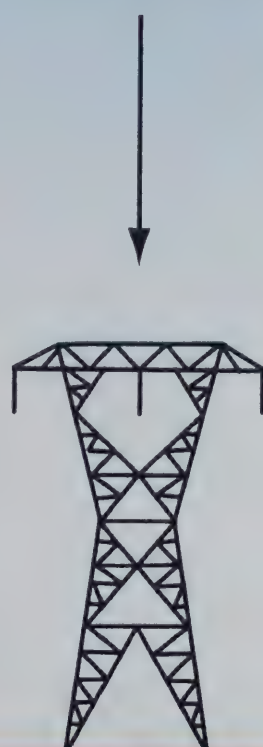
BARREN RIDGE RENEWABLE TRANSMISSION PROJECT

CROSS SECTION C ALTERNATIVE 1

EXISTING:
SCE 220kV



EXISTING:
SCE 220kV



EXISTING:
SCE 220kV



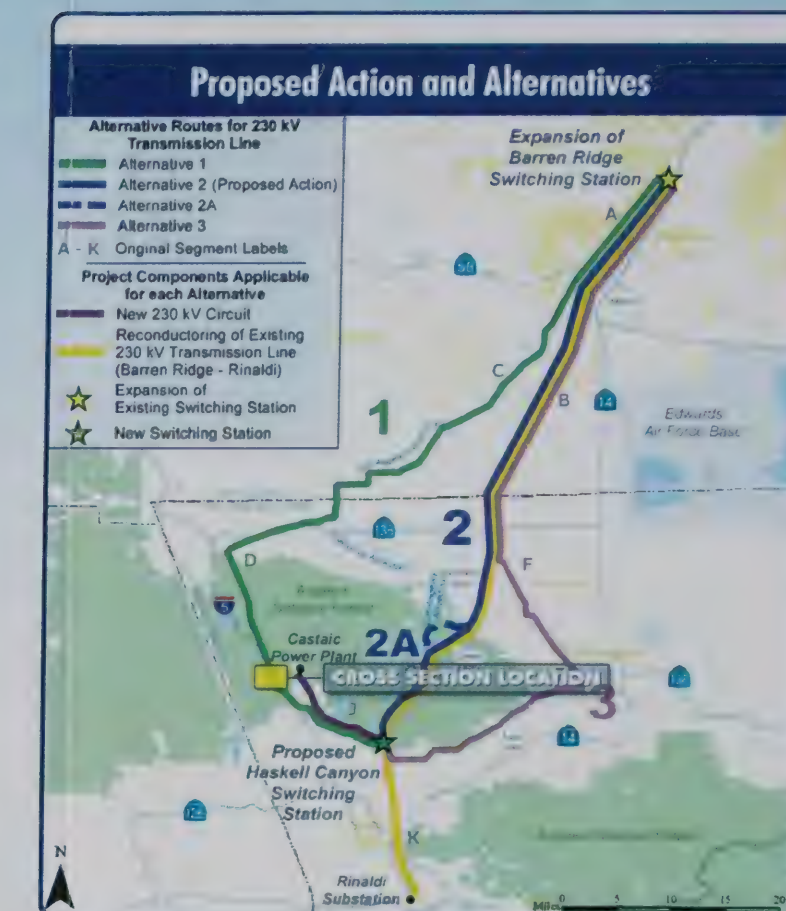
PROPOSED:
BRRTP 230kV



EXISTING SCE R.O.W.

200' PROPOSED
R.O.W.

Typical Cross Section
View Looking Northwest



Cross Sections and maps are for review purposes only. Project may change pending public and regulatory review.



BARREN RIDGE RENEWABLE TRANSMISSION PROJECT

CROSS SECTION D ALTERNATIVE 1

PROPOSED:
BRRTP 230kV



EXISTING:
LADWP 230kV



EXISTING:
LADWP 230kV

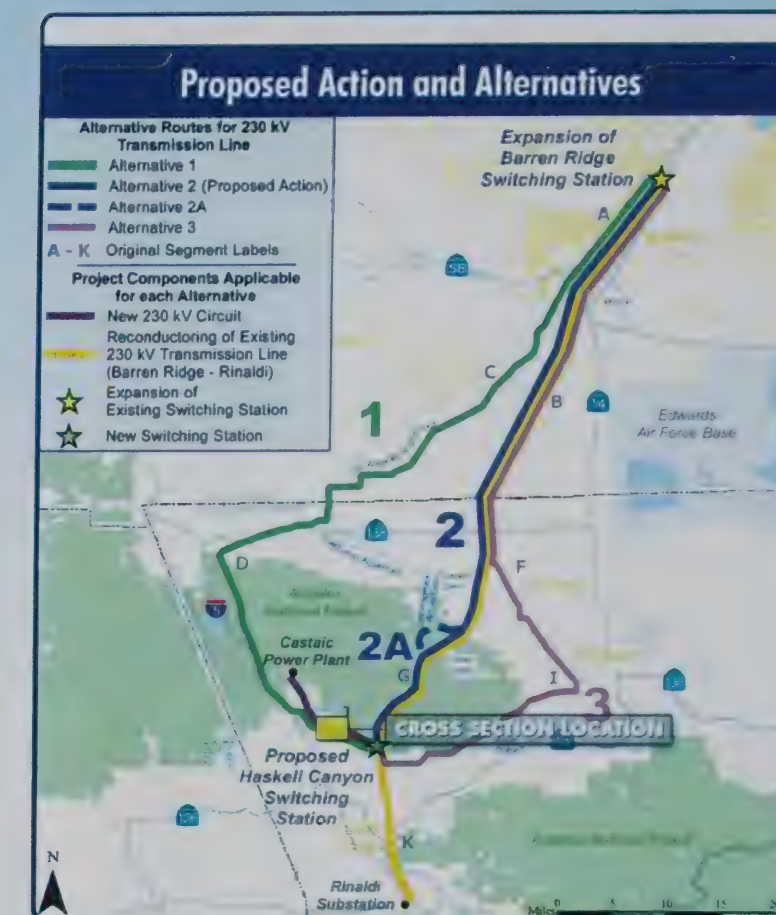


200' PROPOSED
R.O.W.

105' EXISTING
R.O.W.

105' EXISTING
R.O.W.

Typical Cross Section
View Looking Northwest

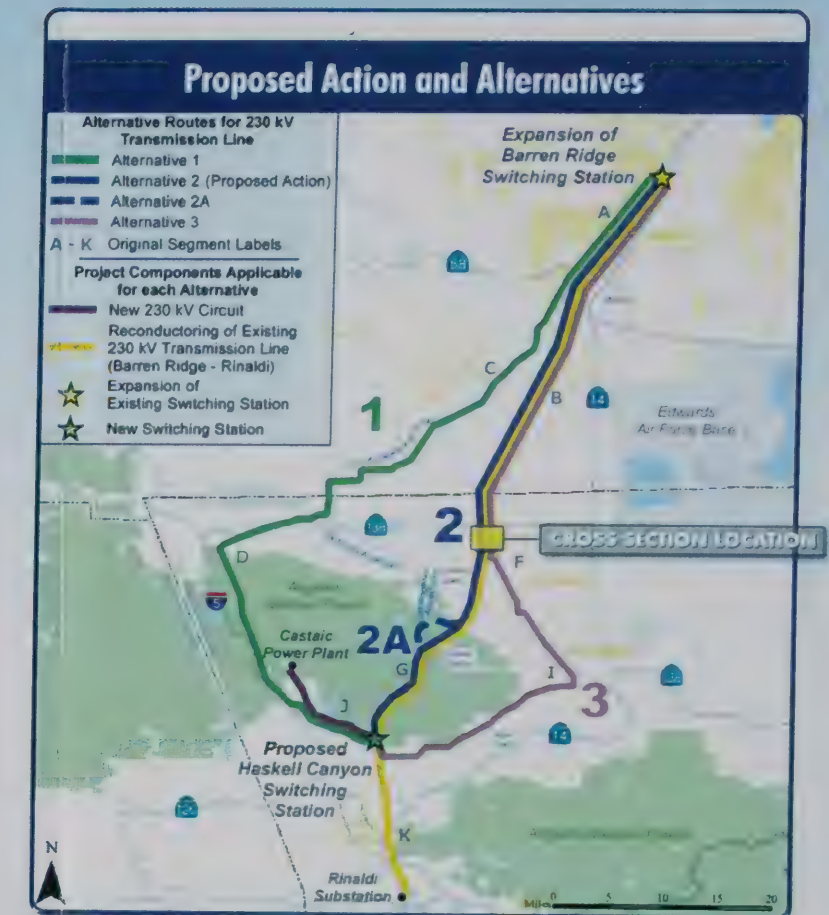
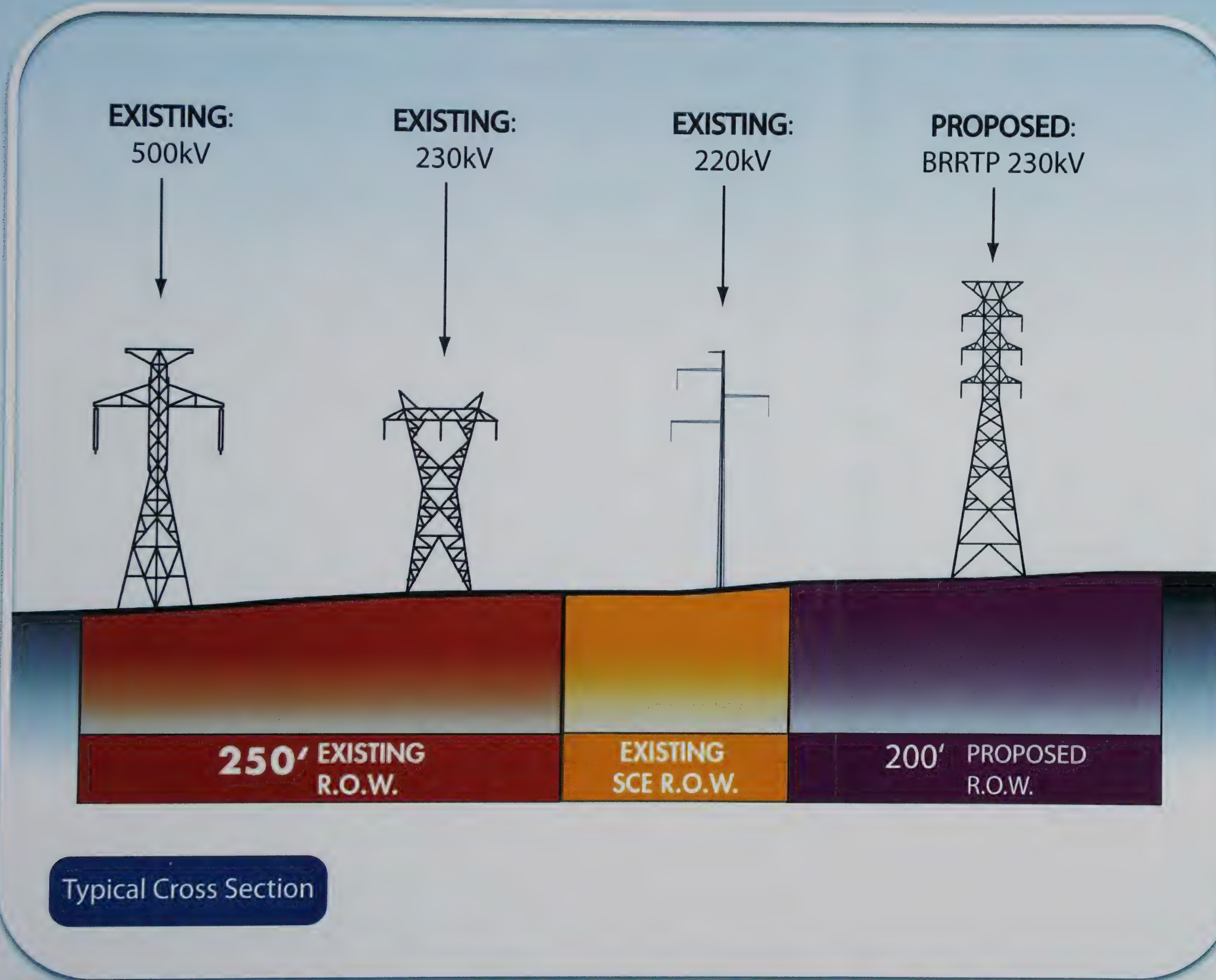


Cross Sections and maps are for review purposes only. Project may change pending public and regulatory review.



BARREN RIDGE RENEWABLE TRANSMISSION PROJECT

CROSS SECTION E ALTERNATIVES 2, 2a AND 3



Cross Sections and maps are for review purposes only. Project may change pending public and regulatory review.



BARREN RIDGE RENEWABLE TRANSMISSION PROJECT

CROSS SECTION F ALTERNATIVE 2 AND 2a

**EXISTING:
500kV DC**



**PROPOSED THREE-
CIRCUIT TOWERS:**

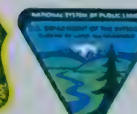
BR RTP 230kV
BR-RIN 230kV



125' EXISTING
R.O.W.

125' EXISTING
R.O.W.

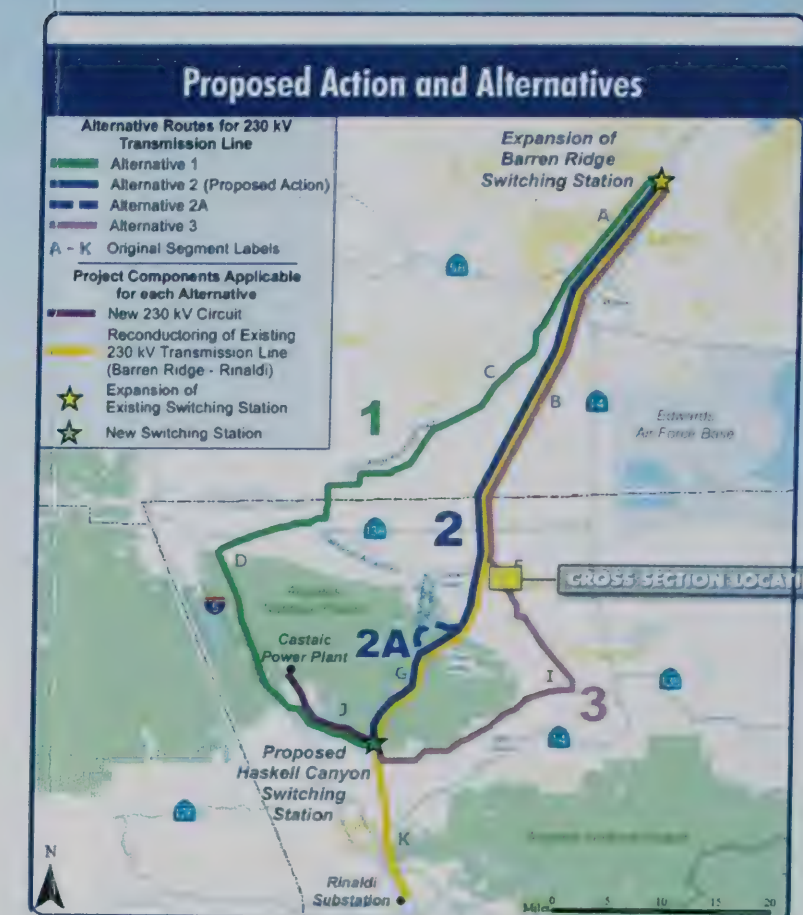
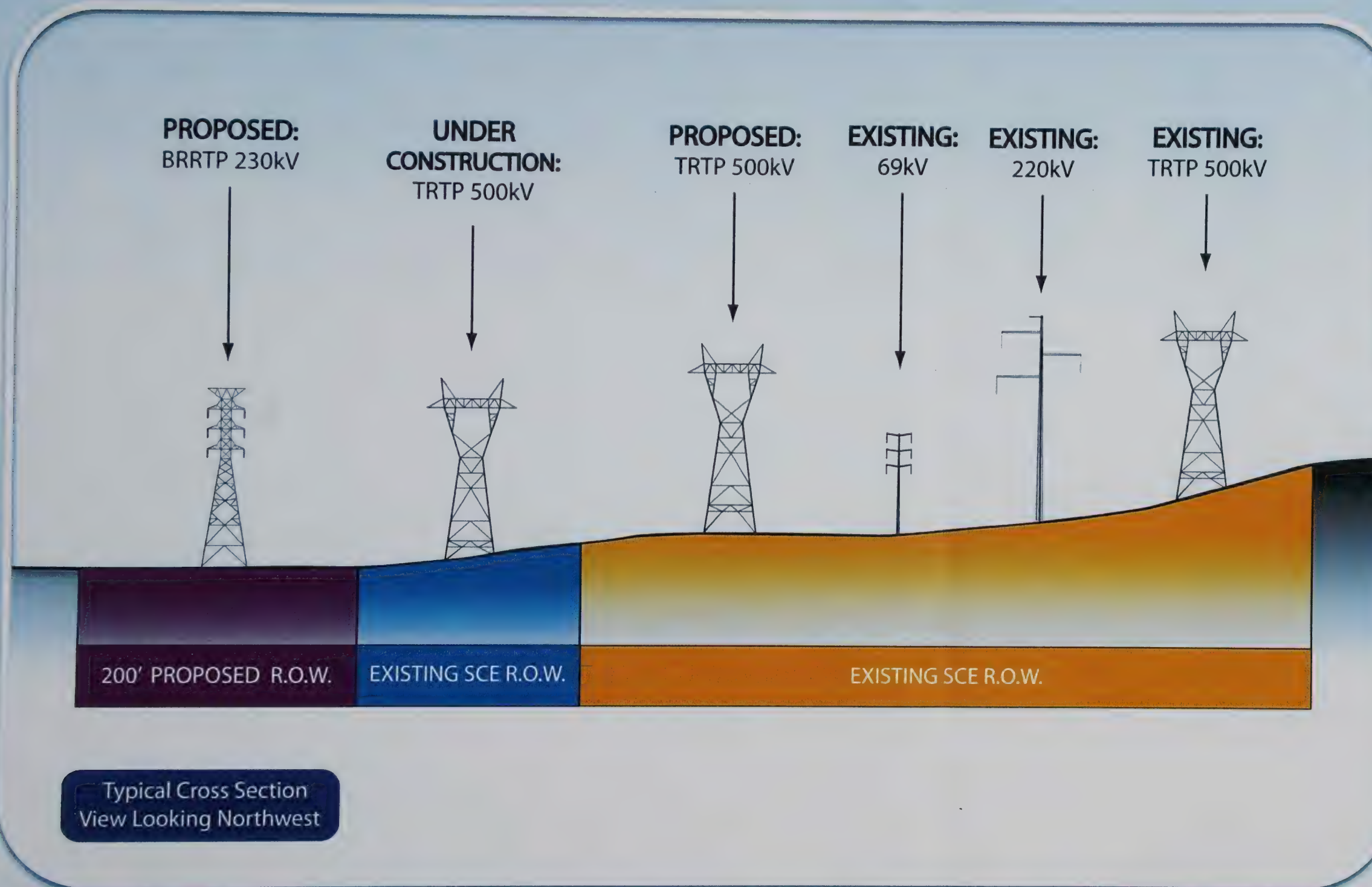
Typical Cross Section
View Looking Northeast



Cross Sections and maps are for review purposes only. Project may change pending public and regulatory review.

BARREN RIDGE RENEWABLE TRANSMISSION PROJECT

CROSS SECTION G ALTERNATIVE 3

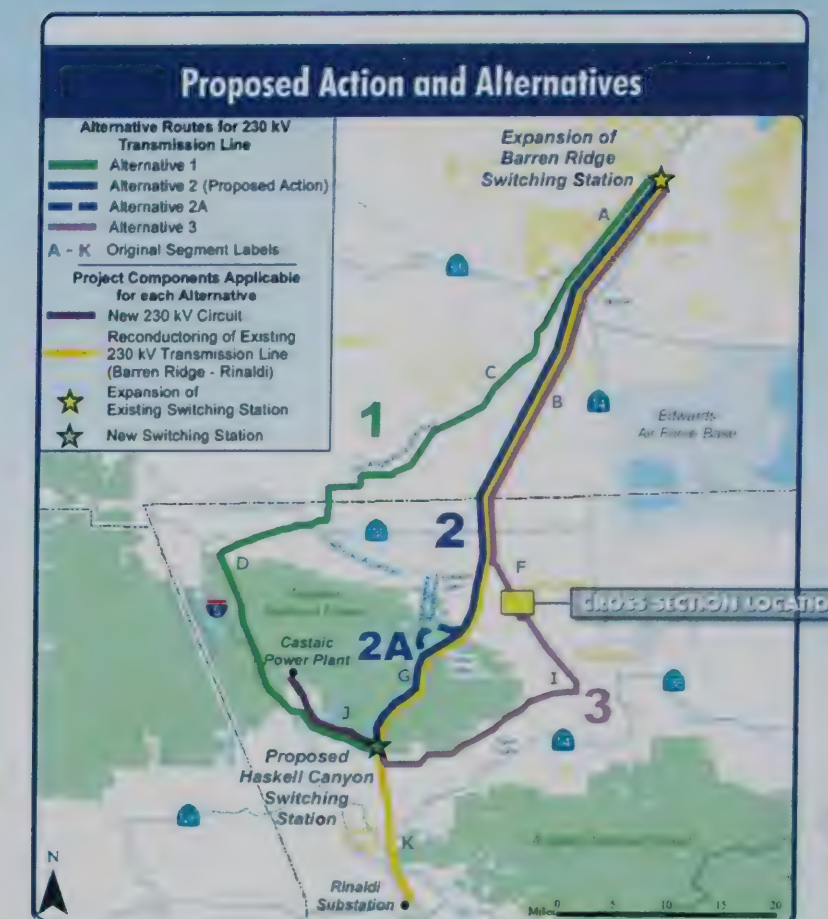
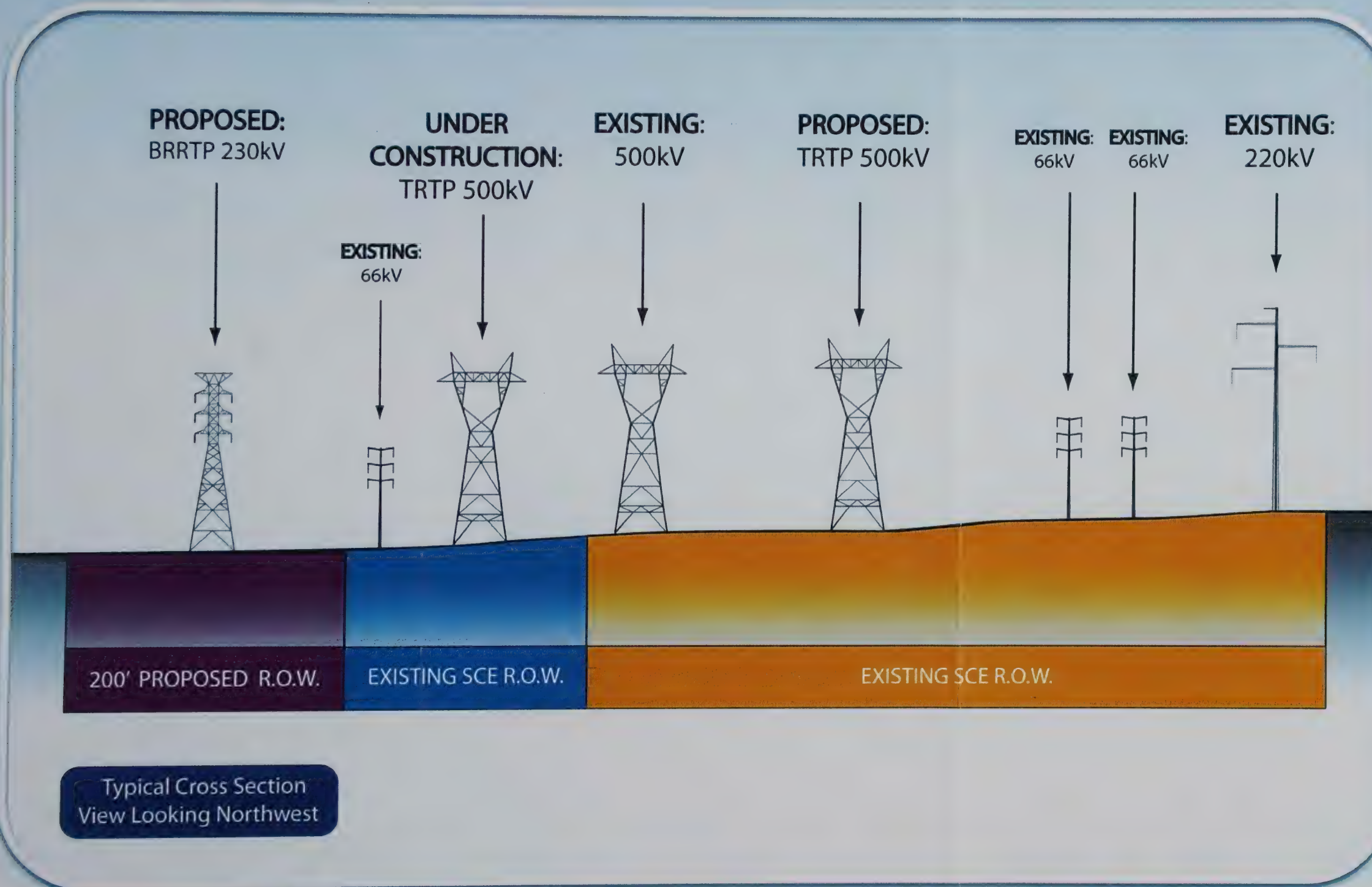


Cross Sections and maps are for review purposes only. Project may change pending public and regulatory review.



BARREN RIDGE RENEWABLE TRANSMISSION PROJECT

CROSS SECTION H ALTERNATIVE 3

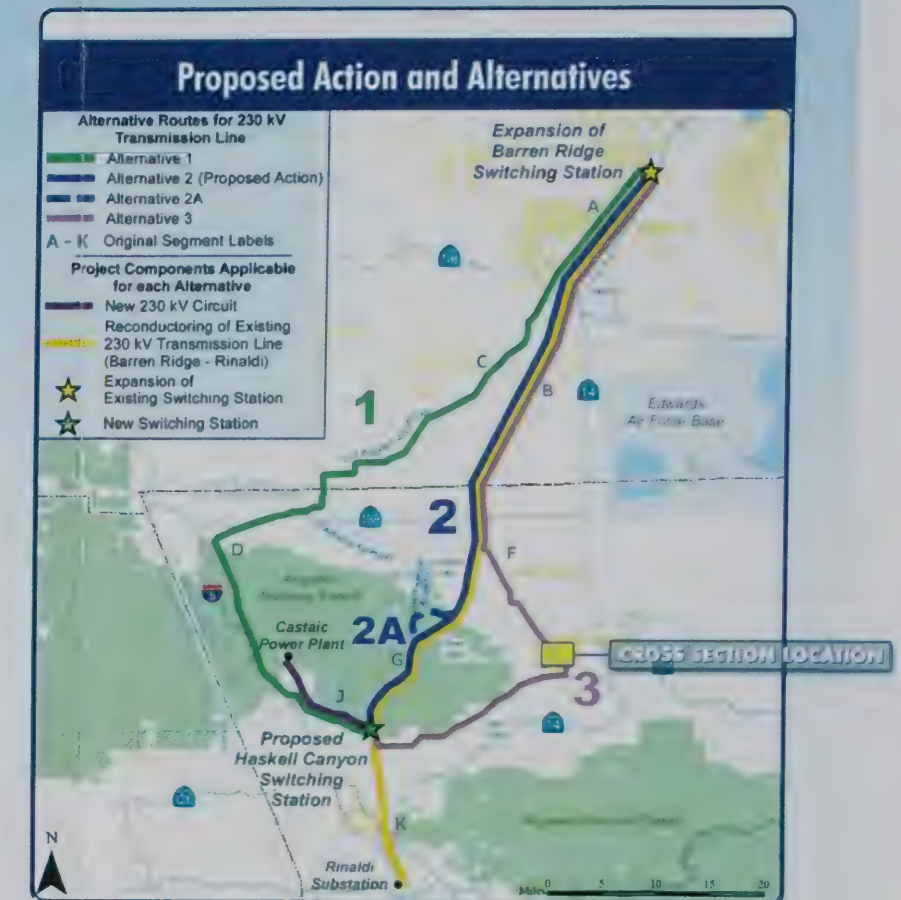
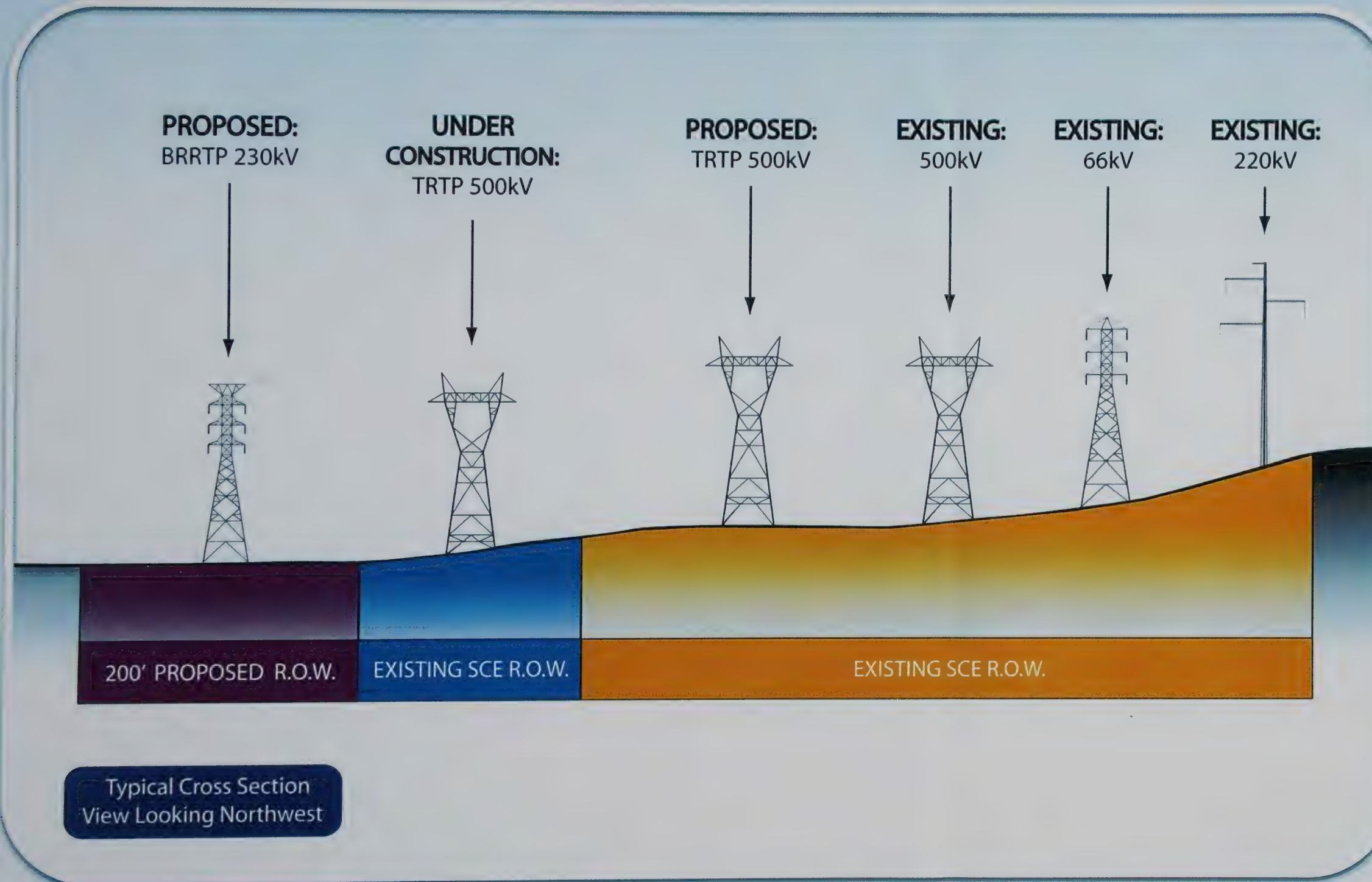


Cross Sections and maps are for review purposes only. Project may change pending public and regulatory review.



BARREN RIDGE RENEWABLE TRANSMISSION PROJECT

CROSS SECTION I ALTERNATIVE 3

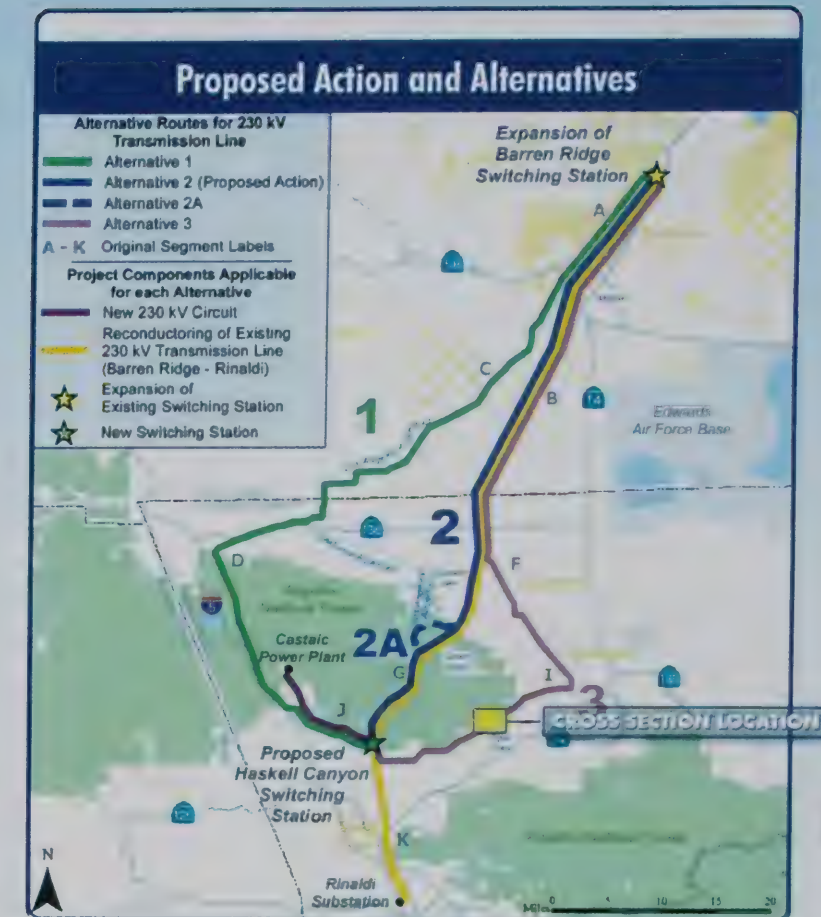


Cross Sections and maps are for review purposes only. Project may change pending public and regulatory review.



BARREN RIDGE RENEWABLE TRANSMISSION PROJECT

CROSS SECTION J ALTERNATIVE 3



EXISTING:
500kV



EXISTING:
500kV



PROPOSED:
BRRTP 230kV



EXISTING LADWP R.O.W.

200' PROPOSED
R.O.W.

Typical Cross Section
View Looking Northeast

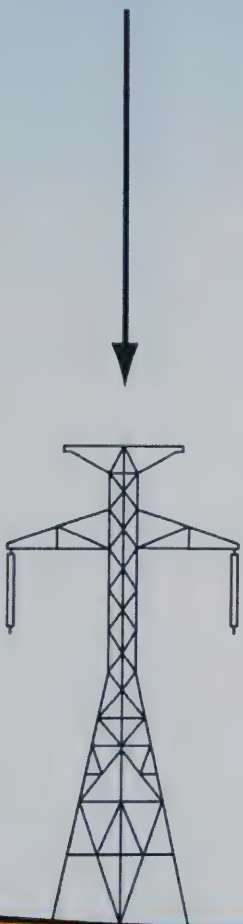
Cross Sections and maps are for review purposes only. Project may change pending public and regulatory review.



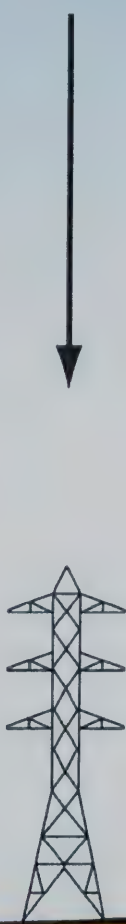
BARREN RIDGE RENEWABLE TRANSMISSION PROJECT

CROSS SECTION K
RECONDUCTORING

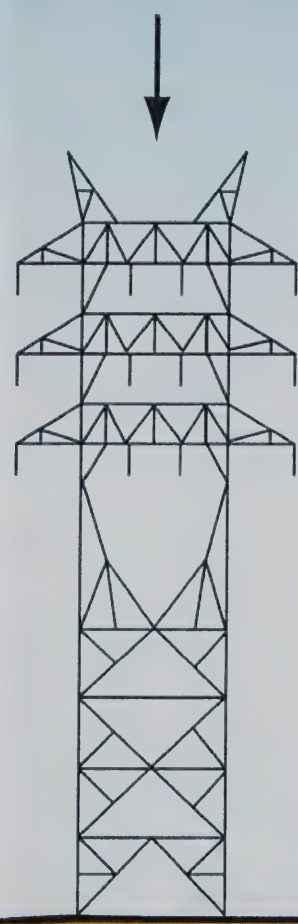
EXISTING:
500kV DC



EXISTING:
115kV



EXISTING:
4-CIRCUIT 230kV



EXISTING LADWP R.O.W.

Typical Cross Section
View Looking North



Cross Sections and maps are for review purposes only. Project may change pending public and regulatory review.



APPENDIX M: ELECTRICAL EFFECTS DATA TABLES

TABLE M-1. ALTERNATIVE 1 TRANSMISSION CORRIDOR - INDUCED CURRENTS IN OBJECTS

Object	Induced Current (I _{sc}), mA		NESC Rule, mA
	Case 1		
	Maximum in ROW	Maximum Edge of ROW	
Large Tractor Trailer, Length=40',Width=8',Height=12'	4.1	3.6	5
Large School Bus, Length=34',Width=8',Height=9'	2.5	2.2	5
Combine, Length=30',Width=7.5',Height=11.5'	2.4	2.2	5
Pickup Truck, Length=17',Width=7',Height=6'	0.6	0.6	5
Car, Length=19',Width=6',Height=5'	0.7	0.6	5
Horse, Length=19',Width=6',Height=5'	1.7	1.5	5
Building Insulated, Roof Conductive, Length=40', Width=15',Height=12'	19.0	0.8	5
Building Conductive, Roof Insulated, Length=40', Width=15',Height=12'	15.0	0.6	5
Building Conductive, Roof Conductive, Length=40', Width=15',Height=12'	21.7	0.9	5
Fence, 1,000' in Length	1.9	0.1	5
Fence, One Mile in Length	10.0	0.4	5

TABLE M-2. ALTERNATIVES 2 AND 2A TRANSMISSION CORRIDORS - INDUCED CURRENTS IN OBJECTS

Object	Induced Current (I _{sc}), mA				NESC Rule, mA
	Case 2		Case 3		
	Maximum in ROW	Maximum Edge of ROW	Maximum in ROW	Maximum Edge of ROW	
Large Tractor Trailer, Length=40',Width=8',Height=12'	2.5	0.1	4.1	0.1	5
Large School Bus, Length=34',Width=8',Height=9'	1.5	0.1	2.5	0.1	5
Combine, Length=30',Width=7.5',Height=11.5'	1.5	0.1	2.4	0.1	5
Pickup Truck, Length=17',Width=7',Height=6'	0.4	0.0	0.6	0.0	5
Car, Length=19',Width=6',Height=5'	0.4	0.0	0.7	0.0	5
Horse, Length=19',Width=6',Height=5'	1.1	0.9	1.7	0.1	5
Building Insulated, Roof Conductive, Length=40', Width=15',Height=12'	19.0	0.8	30.8	0.9	5
Building Conductive, Roof Insulated, Length=40', Width=15',Height=12'	15.0	0.6	24.3	0.7	5
Building Conductive, Roof Conductive, Length=40', Width=15',Height=12'	21.7	0.9	35.1	1.1	5
Fence, 1,000' in Length	1.9	0.1	3.1	0.1	5
Fence, One Mile in Length	10.0	0.4	16.3	0.5	5

TABLE M-3. ALTERNATIVE 3 TRANSMISSION CORRIDOR - INDUCED CURRENTS IN OBJECTS

Object	Induced Current (I_{sc}), mA				NESC Rule, mA
	Case 4		Case 5		
	Maximum in ROW	Maximum Edge of ROW	Maximum in ROW	Maximum Edge of ROW	
Large Tractor Trailer, Length=40', Width=8', Height=12'	2.6	1.2	2.7	5.1	5
Large School Bus, Length=34', Width=8', Height=9'	1.6	0.7	1.6	3.1	5
Combine, Length=30', Width=7.5', Height=11.5'	1.5	0.7	1.6	3.0	5
Pickup Truck, Length=17', Width=7', Height=6'	0.4	0.2	0.4	0.8	5
Car, Length=19', Width=6', Height=5'	0.4	0.2	0.5	0.9	5
Horse, Length=19', Width=6', Height=5'	1.1	0.5	1.1	2.2	5
Building Insulated, Roof Conductive, Length=40', Width=15', Height=12'	19.4	9.1	20.2	38.9	5
Building Conductive, Roof Insulated, Length=40', Width=15', Height=12'	15.3	7.2	16.0	30.8	5
Building Conductive, Roof Conductive, Length=40', Width=15', Height=12'	22.1	10.4	23.1	44.4	5
Fence, 1,000' in Length	1.9	0.9	2.0	3.9	5
Fence, One Mile in Length	10.2	4.8	10.7	20.5	5

TABLE M-4. CASTAIC-HASKELL TRANSMISSION CORRIDOR - INDUCED CURRENTS IN OBJECTS

Object	Induced Current (I_{sc}), mA		NESC Rule, mA
	Case 6		
	Maximum in ROW	Maximum Edge of ROW	
Large Tractor Trailer, Length=40', Width=8', Height=12'	2.5	0.3	5
Large School Bus, Length=34', Width=8', Height=9'	1.5	0.2	5
Combine, Length=30', Width=7.5', Height=11.5'	1.5	0.2	5
Pickup Truck, Length=17', Width=7', Height=6'	0.4	0.0	5
Car, Length=19', Width=6', Height=5'	0.4	0.0	5
Horse, Length=19', Width=6', Height=5'	1.1	0.1	5
Building Insulated, Roof Conductive, Length=40', Width=15', Height=12'	18.9	2.1	5
Building Conductive, Roof Insulated, Length=40', Width=15', Height=12'	14.9	1.7	5
Building Conductive, Roof Conductive, Length=40', Width=15', Height=12'	21.5	2.4	5
Fence, 1,000' in Length	1.9	0.2	5
Fence, One Mile in Length	10.0	1.1	5

TABLE M-5. RECONDUCTOR TRANSMISSION CORRIDOR - INDUCED CURRENTS IN OBJECTS

Object	Induced Current (I_{sc}), mA		NESC Rule, mA
	Case 7		
	Maximum in ROW	Maximum Edge of ROW	
Large Tractor Trailer, Length=40',Width=8',Height=12'	4.4	1.4	5
Large School Bus, Length=34',Width=8',Height=9'	2.7	0.8	5
Combine, Length=30',Width=7.5',Height=11.5'	2.6	0.8	5
Pickup Truck, Length=17',Width=7',Height=6'	0.7	0.2	5
Car, Length=19',Width=6',Height=5'	0.8	0.2	5
Horse, Length=19',Width=6',Height=5'	1.8	0.6	5
Building Insulated, Roof Conductive, Length=40',Width=15',Height=12'	33.2	10.6	5
Building Conductive, Roof Insulated, Length=40',Width=15',Height=12'	26.3	8.3	5
Building Conductive, Roof Conductive, Length=40',Width=15',Height=12'	37.9	12	5
Fence, 1,000' in Length	3.3	1.1	5
Fence, One Mile in Length	17.5	5.6	5

APPENDIX N: DRAFT CONFORMITY DETERMINATION

**U.S. Department of Agriculture
Forest Service
Angeles National Forest**

**U.S. Department of the Interior
Bureau of Land Management
California Desert District**

Barren Ridge Renewable Transmission Project

Clean Air Act

Draft

General Conformity Determination

1.0 INTRODUCTION

The U.S. Department of Agriculture (USDA) Forest Service and the U.S. Department of the Interior (USDOl) Bureau of Land Management are in the process of evaluating environmental effects of the Barren Ridge Renewable Transmission Project (BRRTP). This Project would connect renewable resource areas in Kern County with Los Angeles Department of Water and Power's (LADWP) transmission system in order to deliver power produced by renewable resources to utility load centers. The Preferred Alternative selected by the USDA Forest Service and USDOl Bureau of Land Management, includes new transmission lines and upgraded infrastructure along an approximately 76 mile corridor beginning at the Barren Ridge Substation in Kern County and extending south through the Antelope Valley, the Angeles National forest (ANF), and continuing to the Haskell Substation in Los Angeles County, California.

Based on the General Conformity requirements as codified in 40 CFR Part 93 et seq; November 1993, the USDA Forest Service and the USDOl Bureau of Land Management must make a determination of whether the Proposed Action conforms to the applicable State Implementation Plan (SIP). Conformity is defined as compliance with the SIP's purpose of eliminating or reducing the severity and number of violations of the National Ambient Air Quality Standards (NAAQS) and achieving expeditious attainment of such standards, and that the activities will not:

- Cause or contribute to any new violation of any standard;
- Increase the frequency or severity of any existing violation of any standard in any area; or
- Delay timely attainment of any standard or any required interim emission reductions or other milestones in any area.

2.0 PROJECT DESCRIPTION AND SCHEDULE

The BRRTP is located in Kern and Los Angeles counties. It is approximately 76 miles in length and extends from the Barren Ridge Switching Station to Rinaldi Substation, and extends approximately 12 miles from Castaic Power Plant to the proposed Haskell Switching Station. The proposed BRRTP includes the following elements:

- 1) Construction of a new double-circuit 230 kV transmission line from the Barren Ridge Switching Station to a new switching station located within Haskell Canyon. For approximately two miles, from Bee Canyon to Haskell Canyon, the new transmission lines will be placed onto vacant positions on the existing four-circuit structures (towers numbered 234-3 through 236-1).
- 2) Addition of approximately 12 miles of 230 kV transmission circuit onto existing structures (towers 1-1 through 12-1) between the new Haskell Canyon Switching Station and the Castaic Power Plant. Approximately four miles of NFS lands and 300 feet of BLM-managed public lands would be traversed.
- 3) Reconductor approximately 75 miles of the existing BR-RIN 230 kV transmission line with larger conductors from the Barren Ridge Switching Station and Rinaldi Substation (towers 176-1 through 251-1). Approximately 13 miles of NFS lands and four miles of BLM-managed public lands would be traversed.
- 4) Construction of a new 400 feet by 600 feet switching station in Haskell Canyon.
- 5) Expansion of the existing Barren Ridge Switching Station located 12 miles north of Mojave, California. The existing switching station is approximately 250 feet by 500 feet. It would be expanded by 235 feet by 500 feet for a total station size of 485 feet by 500 feet (5.5 acres).

The BRRTP falls within portions of two different air basins. These are the Mojave Desert Air Basin (MDAB) and the South Coast Air Basin (SCAB). The BRRTP Area falls within the jurisdiction of three different regional air districts. The Antelope Valley Portion of Los Angeles County is in the Antelope Valley Air Quality Management District (AVAQMD). The non-desert portion of Los Angeles County is within the SCAQMD. The eastern (desert) portion of Kern County is within the Kern County Air Pollution Control District (KCAPCD).

3.0 GENERAL CONFORMITY REQUIREMENTS

Section 176(c) of the Federal Clean Air Act (CAA), as articulated in the USEPA General Conformity Rule (40 CFR 93 et seq.), states that a federal agency cannot issue a permit for or support an activity unless the agency determines that it will conform to the most recent USEPA-approved SIP. This means that projects using federal funds or requiring federal approval must not (1) cause or contribute to any new violation of a NAAQS, (2) increase the frequency or severity of any existing violation, or (3) delay the timely attainment of any standard, interim emission reduction, or other milestone. Under the CAA, a conformity analysis must be prepared only for nonattainment criteria pollutants, or their precursors, in nonattainment or maintenance areas (40 CFR §93.153(b)). Moreover, according to 40 CFR §93.153(b), if the total direct and

indirect emissions from the Federal action equal or exceed the General Conformity Rule “*de minimis*” emission thresholds, then the Federal action is required to prepare a general conformity determination.

Table 1 provides the current nonattainment/maintenance area designation and General Conformity *de minimis* emission thresholds for the SCAB, and the Antelope Valley and Kern County portions of the MDAB.

<p style="text-align: center;">Table 1 De Minimis Levels for Determination of Applicability of General Conformity Rule (Tons/year)</p>					
Air Basin	CO	NO _x	ROG	PM ₁₀	PM _{2.5}
MDAB	N/A	25	25	N/A	N/A
SCAB	100	10	10	70	100

Section 40 CFR 93.158 (a) state that if a project’s emission levels exceed the *de minimis* thresholds and there is no applicable exemption, then a conformity determination must be prepared. The conformity determination requires that the Federal agency demonstrate, through computer modeling, purchasing offsets, or other avenues, that emissions associated with the Federal action are in compliance with the SIP.

In addition, the conformity determination criteria listed in 40 CFR 93.158 requires a public participation program. Requirements include a 30-day public comment period, notification in a daily newspaper in the area affected by the Federal Action, and response to public comments which are to be made available upon request within 30 days of the public notice of the final decision.

4.0 PROPOSED ACTION EMISSIONS

The Proposed Action emissions within the USDA Forest Service and USDOl Bureau of Land Management's control have been determined for the duration of the construction period and the 50-year operating period of the transmission line. The analysis has been conducted to satisfy the requirements of 40 CFR 93.159(d), which state:

(d) The analyses required under this subpart must be based on the total of direct and indirect emissions from the action and must reflect emission scenarios that are expected to occur under each of the following cases:

- (1) The attainment year specified in the SIP, or if the SIP does not specify an attainment year, the latest attainment year possible under the Act; or
- (2) The last year for which emissions are projected in the maintenance plan;
- (3) The year during which the total of direct and indirect emissions from the action is expected to be the greatest on an annual basis; and
- (4) Any year for which the applicable SIP specifies an emissions budget.

The maximum annual emissions occur during the construction period. The construction and operational emissions would cover a period out to approximately 2065, which is well past any mandated attainment year or any emissions projections in any maintenance plan, and past any year the SIP specifies an emissions budget.

Construction Emissions

Construction emissions include emissions from off-road and on-road equipment, emissions from helicopters used in the construction of the BR RTP, and emissions of fugitive dust. On-site air pollutant emissions during construction would principally consist of exhaust emissions from heavy-duty diesel and gasoline-powered construction equipment, fugitive dust from earthmoving activities, and fugitive dust from travel of vehicles and equipment on unpaved surfaces. Off-site air pollutant emissions would result from workers commuting to and from the construction site, transport of construction materials to and from the site using trucks, and helicopters used in the construction.

Construction Schedule. The emission calculations used the latest LADWP construction schedule provided in July 2010. The analysis also used data on the number of transmission towers in the segments within the USDA Forest Service and USDOJ Bureau of Land Management jurisdiction that will be reconducted as part of the project to calculate helicopter emissions. Reconducting is the only activity that will require the use of helicopters. A linear construction schedule, where work would occur from north to south for each affected project segment, was assumed. Based on the current construction schedule, the following years of construction activities were assumed:

- 2012 – Preparation activities for construction of Haskell Switching Station and expansion of Barren Ridge Switching Station
- 2013 – Construction of new transmission line, Haskell Switching Station, and expansion of Barren Ridge Switching Station
- 2014 – Reconducting of existing transmission line

The Haskell and Barren Ridge Switching Stations are outside of Federal lands and would not be considered in this conformity analysis.

The number of towers that will be reconducted within Federal lands, and associated emissions, were calculated based on the lengths of the transmission line to be reconducted. Table 2 presents a summary of the length of transmission lines within Federal lands, the number of towers that will be reconducted, and the air district under which jurisdiction the portion of the Proposed Action is located.

Table 2 Segment Lengths and Transmission Towers within Federal Lands			
Air Basin	Jursidiction	Miles of Transmission Line	Number of Towers
MDAB	Bureau of Land Management	3.67	18
SCAB	Forest Service	12.99	65

Off-road Equipment Emissions. The methodology for estimating on-site construction emissions associated with off-road equipment consists of two basic steps: (1) determining the total number of operating hours for each piece of equipment; and (2) applying the appropriate emission factor to compute the associated emissions for each piece of operating equipment.

Equipment requirements and operating hours were obtained from the construction schedule provided by LADWP for the Proposed Action. Emission factors used for this project are based on information from the California Air Resources Board's (CARB) OFFROAD2007 Model, as calculated by the SCAQMD, which represents the fleet of construction emissions available within the region. The SCAQMD used the OFFROAD2007 Model to calculate the emissions for off-road equipment contained within their SIP emissions budget. Exhaust emissions were computed by multiplying the emission factors for each equipment type by the number of equipment pieces, the daily hours of operation, and the number of days the equipment is expected to be used. Exhaust emissions from off-road equipment were then summed to obtain total criteria pollutant emissions for this source category. Attachment A contains detailed emission calculations and includes assumptions used in the analysis.

On-Road Vehicle Emissions. On-road vehicle emissions include emissions from worker vehicles and from truck trips associated with transport of materials to the construction site. The number of worker trips was estimated based on estimates of workforce requirements for the project. It was assumed, on average, that workers would travel 80 miles per day. Truck trips were estimated based on the number and types of trucks identified in the construction schedule. It was also assumed, on average, that trucks would travel 80 miles per day to the construction site. On-road mobile emissions were quantified using emission factors from the EMFAC2007 Model, which was used by the SCAQMD to calculate emissions for on-road vehicles contained within their SIP emissions budget. Emission factors are based on the year of construction. Attachment A contains detailed emission calculations and includes assumptions used in the analysis.

Fugitive Dust Emissions. Fugitive dust emissions include emissions from earthmoving activities and emissions from vehicles traveling on unpaved roads. Fugitive PM₁₀ and PM_{2.5} emissions factors were obtained based on mitigated emission factors from the references used by the SCAQMD, including *Improvement of Specific Emission Factors (BACM Project No. 1) Final Report* (MRI 1996), the URBEMIS Model, Version 9.2.4 (Rimpo and Associates 2007), and the USEPA AP-42 Section 13 (USEPA 2005) as appropriate for each type of fugitive dust emission source. Specific emission factor calculations and citations are provided in Attachment A.

Fugitive dust emissions were assumed to be mitigated based on the use of watering and/or application of a durable non-toxic soil stabilizer.

Helicopter Emissions. Helicopter emissions were based on the types of helicopters and the number of helicopter trips as provided by LADWP. Three types of helicopters were assumed to be required: a light-lift helicopter, a medium-lift helicopter, and a heavy-lift. The light-lift helicopter was assumed to be used to transport personnel to the site and for conductor removal and installation. The medium-lift helicopter would be used for heavier activities such as pad construction, foundation excavation, and equipment removal as required. The heavy-lift helicopter would only be used for heavy activities such as transport and installation of tower components. Helicopter emissions were estimated based on assumed horsepower of the helicopter engines, with emission factors from the Federal Aviation database (FAA 2001). Soil stabilizers will be required on unpaved/disturbed helicopter staging areas, such that fugitive dust prop wash is considered negligible.

Mitigation Measures

To demonstrate conformity with the SIP, feasible control measures that have been identified as SIP measures must be implemented by the project. In addition, mitigation measures were identified in the Draft EIR/EIS for the Proposed Action. The mitigation measures, which will be enforced by the USDA Forest Service in lands under their jurisdiction and by the USDOJ Bureau of Land Management in lands under their jurisdiction¹ after completion of the FEIS and approval of the Record of Decision (ROD), are as follows:

Mitigation Measure AIR-2a: Implement Construction Fugitive Dust Control Plan. The construction contractor shall develop a Fugitive Dust Emission Control Plan (FDECP) for construction work. Measures to be incorporated into the plan include, but are not limited to the following:

- Water the disturbed areas of the active construction sites in sufficient quantities to prevent the generation of visible dust plumes. Watering may not be required in wet weather. Soil binders

¹ Mitigation measures in non-federal lands will be enforced by LADWP as the lead agency under CEQA.

may be used in lieu of watering where soil binders are appropriate and prevent the generation of visible dust plumes.

- Enclose, cover, or water twice daily, and/or apply non-toxic soil binders according to manufacturer's specifications to exposed piles with a five percent or greater silt content.
- ARB certified and agency approved (on federal lands) non-toxic soil binders shall be applied per manufacturer recommendations to active unpaved roadways, unpaved staging areas, and unpaved parking area(s) throughout construction (as allowed by responsible agencies such as the Forest Service and BLM) to reduce fugitive dust emissions. Other non-toxic soil binder products, selected from lists available from EPA's Environmental Technology Verification program or the SCAQMD, may be applied per manufacturer recommendations in place of the ARB certified soil binders if such products can be reasonably demonstrated to be as effective as the ARB certified non-toxic soil binders and be approved by the affected federal agency.
- Water all roads used for any vehicular traffic at least once per every two hours of active operations [3 times per normal 8 hour work day]; OR Water all roads used for any vehicular traffic once daily and restrict vehicle speeds to 15 miles per hour; Apply a chemical stabilizer to all unpaved road surfaces in sufficient quantity and frequency to maintain a stabilized, to reduce fugitive dust emissions.
- All vehicle tires shall be inspected, are to be free of dirt, and washed as necessary prior to entering paved roadways.
- Install wheel washers or wash the wheels of trucks and other heavy equipment where vehicles exit unpaved areas.
- Cover all trucks hauling soil and other loose material, or require at least two feet of freeboard.
- Establish a vegetative ground cover (in compliance with biological resources impact mitigation measures) as appropriate or otherwise create stabilized surfaces on all unpaved areas at each of the construction sites after active construction operations have ceased.
- Increase the frequency of watering unpaved surfaces to more than three times daily, or implement other additional fugitive dust mitigation measures, to all active disturbed fugitive dust emission sources as required by SCAQMD Rule 403 prior to wind events..
- Travel routes to each construction site shall be developed to minimize unpaved road travel.

Mitigation Measure AIR-2b: Properly Maintain Mechanical Equipment. The construction contractor shall ensure that all mechanical equipment associated with project construction is properly tuned and maintained in accordance with the manufacturer's specifications.

Mitigation Measure AIR-2c: Use Ultra Low-sulfur Diesel Fuel. ARB-certified ultra low-sulfur diesel (ULSD) fuel containing 15 ppm sulfur or less shall be used in all diesel-powered construction equipment.

Mitigation Measure AIR-2d: In accordance with LADWP's Environmental Affairs Bulletin 2007-05 dated March 12, 2007, and in accordance with the requirements of the ARB's idling regulations, vehicles with a gross vehicle weight rating (GVWR) of greater than 10,000 pounds "shall not idle the vehicle's primary diesel engine for greater than five minutes at any location."

The five-minute idling limit does not apply for the period during which:

- Idling must occur due to traffic conditions.
- Idling when the vehicle is queuing that at all times is more than 100 feet from any real property zoned for individual or multifamily housing units that has one or more such units on it.
- Idling when forced to remain motionless due to immediate adverse weather conditions.
- Idling to verify that the vehicle is in safe operating condition.
- Idling is required for mandatory resting, servicing, repairing, or diagnostic purposes.
- Idling when positioning or providing a power source for equipment or operations other than transporting passengers or propulsion.
- Idling while operating defrosters, heaters, air conditioners, or other equipment solely to prevent a safety or health emergency.

Mitigation Measure AIR-2e: Schedule Deliveries Outside of Peak Traffic Hours. All material deliveries to the marshalling yards and from the marshalling yards to the construction sites shall be scheduled outside of peak traffic hours (6:00 to 9:30 am and 3:30 to 6:30 pm) to the extent feasible, and other truck trips during peak traffic hours shall be minimized to the extent feasible.

Mitigation Measure AIR-2f: Off-road Diesel-fueled Equipment Standards. All off-road construction diesel engines not registered under ARB's Statewide Portable Equipment Registration Program, which have a rating of 50 hp or more, shall meet, at a minimum, the Tier 2 California Emission Standards for Off-Road Compression-Ignition Engines as specified in California Code of Regulations, Title 13, Section 2423(b)(1) unless that such engine is not available for a particular item of equipment. In the event a Tier 2 engine is not available for any off-road engine larger than 100 hp, that engine shall be equipped with a Tier 1 engine. In the event a Tier 1 engine is not available for any off-road engine larger than 100 hp, that engine shall be equipped with a catalyzed diesel particulate filter (soot filter), unless certified by engine manufacturers that the use of such devices is not practical for specific engine types. Equipment properly registered under and in compliance with ARB's Statewide Portable Equipment Registration Program are in compliance with this mitigation measure.

Mitigation Measure AIR-2g: On-road Vehicles Standards. All on-road construction vehicles shall meet all applicable California on-road emission standards and shall be licensed in the State of California. This does not apply to construction worker personal vehicles.

Mitigation Measure AIR-2h: Off-road Gasoline-fueled Equipment Standards. All off-road stationary and portable gasoline powered equipment shall have EPA Phase 1/Phase 2 compliant engines, where the specific engine requirement shall be based on the new engine standard in affect two years prior to initiating project construction.

Mitigation Measure AIR-2a was taken into account in the emission estimates. For Mitigation Measure AIR-2a, a control efficiency of 61 percent was assumed for watering three times daily. Other fugitive dust-causing activities (such as earthmoving) were controlled by watering with emission reductions calculating by using a conservatively low assumed soil moisture content of 10 percent. Mitigation measures will be included in the ROD for the Proposed Action, as Federal Lead Agencies, the USDA Forest Service and USDOJ Bureau of Land Management are required to enforce compliance with these measures in areas under their jurisdiction.

Emission Estimates

To date, three alternatives are under consideration for the Proposed Action. Anticipated mitigated annual emissions for each segment of the Proposed Action within Federal Lands were calculated based on the project alternative with the highest emissions. Emissions from any of the alternatives would not be anticipated to be higher than the emissions presented in Table 3. Emissions are compared with the applicable *de minimis* thresholds.

Table 3. Alternative 1 Project Annual Construction Emissions and Comparison with General Conformity *De Minimis* Thresholds

Air Basin	Emissions					
	ROG	CO	NO _x	SO _x ^a	PM ₁₀	PM _{2.5}
2013 Annual Emissions, tpy						
	ROG	CO	NO _x	SO _x ^a	PM ₁₀	PM _{2.5}
EKAPCD						
New Transmission Line Construction – Federal Lands	0.25	2.73	1.32	0.00	2.79	0.43
General Conformity De Minimis Threshold	100		100			
Exceeds Threshold?	No	N/A	No	N/A	N/A	N/A
AVAQMD						
New Transmission Line Construction – Federal Lands	0	0	0	0	0	0
General Conformity De Minimis Threshold	25		25			
Exceeds Threshold?	No	N/A	No	N/A	N/A	N/A
SCAQMD						
New Transmission Line Construction – Federal Lands	5.84	31.41	26.70	0.19	14.92	3.21
General Conformity De Minimis Threshold	10	100	10	100	70	100
Exceeds Threshold?	No	No	Yes ^b	No	No	No
Air Basin	Emissions					
2014 Annual Emissions, tpy						
	ROG	CO	NO _x	SO _x ^a	PM ₁₀	PM _{2.5}
EKAPCD						
Reconductoring – Federal Lands	1.27	4.61	5.19	0.04	2.60	0.64
General Conformity De Minimis Threshold	100		100			
Exceeds Threshold?	No	N/A	No	N/A	N/A	N/A
AVAQMD						
Reconductoring – Federal Lands	0.87	3.38	3.92	0.03	1.65	0.44
General Conformity De Minimis Threshold	25		25			
Exceeds Threshold?	No	N/A	No	N/A	N/A	N/A
SCAQMD						
Reconductoring – Federal Lands	4.65	16.56	20.56	0.16	5.71	2.00
General Conformity De Minimis Threshold	10	100	10	100	70	100
Exceeds Threshold?	No	No	Yes ^b	No	No	No

^aAs PM_{2.5} Precursor

^bFor portion in Federal Lands only

As Table 3 shows, the General Conformity *de minimis* threshold for NO_x emissions is exceeded for 2013 and 204 within the SCAB. No other General Conformity *de minimis* thresholds are exceeded for the Proposed Action. The detailed emission calculations are provided as an attachment (Attachment A) to this analysis.

Operational Emissions

The operational emissions do not increase as a result of the Proposed Action. The Proposed Action replaces existing transmission lines in existing corridors, so the inspection and maintenance requirements do not increase from what is currently required for the existing transmission lines. Also, the fire clearance agreement requirements do not change as a result of the Proposed Action. The negligible normal operating emissions will be mitigated as necessary to comply with SCAQMD, AVAQMD, and KCAPCD rules and regulations. Therefore, it has been determined that the normal operating emissions do not trigger further general conformity analysis.

5.0 STATUS OF APPLICABLE STATE IMPLEMENTATION PLAN

The SCAQMD is required to develop SIPs for criteria pollutants that are classified as nonattainment to meet clean air standards and associated Clean Air Act requirements. The currently approved SIPs for the SCAB are summarized below.

- Ozone (O₃): SIP approved by the USEPA on April 10, 2000 (65 FR 18903), based on the 1997 AQMP and a 1999 amendment to the 1997 AQMP.
- Carbon Monoxide (CO): SIP approved by the USEPA on May 11, 2007 (72 FR 26718), based on the 2005 redesignation request and maintenance plan. In this SIP approval, the USEPA also redesignated the SCAB from nonattainment to attainment/maintenance for CO.
- Particulate Matter Less than 10 Microns (PM₁₀): SIP approved by the USEPA on April 18, 2003 (68 FR 19315), based on the 1997 AQP, amendments to the 1997 AQMP submitted in 1998 and 1999, and further modifications to the 1997 AQMP submitted in a status report to the USEPA in 2002.
- Particulate Matter Less than 2.5 Microns (PM_{2.5}): No USEPA-approved SIP.

- Nitrogen Dioxide (NO₂): SIP approved by the USEPA on July 24, 1998 (63 FR 39747), based on the 1997 AQMP. In this SIP approval, the USEPA also redesignated the SCAB from nonattainment to attainment/maintenance for NO₂.

The SCAQMD released the Final 2007 AQMP on June 1, 2007, and as noted above, the AQMP forms the basis of a proposed SIP revision submitted to the USEPA. The SCAQMD is in the process of updating its SIP to address the revisions to the 8-hour O₃ NAAQS and the PM_{2.5} NAAQS. Accordingly, as part of the conformity analysis for the Proposed Action, the USDA Forest Service and the USDOJ Bureau of Land Management are requesting that the SCAQMD include the emissions associated with the Proposed Action in its current SIP update. In accordance with the provisions of 40 CFR 93.161, Conformity evaluation for Federal installations with facility-wide emission budgets, the following actions allow for the inclusion of an emissions budget included within the SIP to be used for demonstrating conformity under 93.158(a)(1):

(a) The State, local or tribal agency responsible for implementing and enforcing the SIP or TIP can in cooperation with Federal agencies or third parties authorized by the agency that operate installations subject to Federal oversight develop and adopt a facility-wide emission budget to be used for demonstrating conformity under §93.158(a)(1). The facility-wide budget must meet the following criteria:

- (1) Be for a set time period;
- (2) Cover the pollutants or precursors of the pollutants for which the area is designated nonattainment or maintenance;
- (3) Include specific quantities allowed to be emitted on an annual or seasonal basis;
- (4) The emissions from the facility along with all other emissions in the area will not exceed the emission budget for the area;
- (5) Include specific measures to ensure compliance with the budget, such as periodic reporting requirements or compliance demonstration, when the Federal agency is taking an action that would otherwise require a conformity determination;
- (6) Be submitted to EPA as a SIP revision;
- (7) The SIP revision must be approved by EPA.

(b) The facility-wide budget developed and adopted in accordance with paragraph (a) of this section can be revised by following the requirements in paragraph (a) of this section.

(c) Total direct and indirect emissions from Federal actions in conjunction with all other emissions subject to General Conformity from the facility that do not exceed the facility budget adopted pursuant to paragraph (a) of this section are “presumed to conform” to the SIP and do not require a conformity analysis.

(d) If the total direct and indirect emissions from the Federal actions in conjunction with the other emissions subject to General Conformity from the facility exceed the budget adopted pursuant to paragraph (a) of this section, the action must be evaluated for conformity. A Federal agency can use the compliance with the facility-wide emissions budget as part of the demonstration of conformity, *i.e.*, the agency would have to mitigate or offset the emissions that exceed the emission budget.

(e) If the SIP for the area includes a category for construction emissions, the negotiated budget can exempt construction emissions from further conformity analysis.

Accordingly, the USDA Forest Service and the USDOJ Bureau of Land Management have submitted the emissions estimates for construction of the Proposed Action during Years 2013 and 2014 for inclusion in the SCAQMD’s AQMP emissions budget for the SIP update. Inclusion of the emissions budget is for a set time period (2013 and 2014), covers the pollutant for which a conformity determination is required (NOx), and will be submitted as a SIP revision to the USEPA. The USDA Forest Service and the USDOJ Bureau of Land Management will monitor emissions through periodic reporting of construction activity associated with the Proposed Action.

6.0 CONFORMITY ANALYSIS

As shown in Table 3, the total NOx emissions from the project construction activities would be greater than the General Conformity *de minimis* emission threshold of 10 tons per year for the SCAB during 2013 and 2014. The NOx threshold of 10 tons per year is based on the SCAB’s classification as an extreme ozone nonattainment area. There are two potential procedures for determining conformance for NOx emissions that exceed the applicable *de minimis* thresholds. One procedure is for emissions from the action to be determined and documented by the State agency primarily responsible for the applicable SIP (in this case, the SCAQMD has primary

responsibility for the SCAB's portion of the SIP) to not cumulatively result in an exceedance of the emissions budgets specified in the applicable SIP (40 CFR 93.158(a)(5)(i)(A)). The other procedure is to fully offset the total direct and indirect emissions of nonattainment pollutants from the action within the same nonattainment area through an enforceable measure so that there is no net increase in emissions of nonattainment pollutants (40 CFR 93.158(a)(2)).

As discussed in Section 5.0, the USDA Forest Service and the USDOJ Bureau of Land Management have submitted the emissions budget to the SCAQMD for inclusion in their SIP update as required under 40 CFR 93.161. The emissions budget will be included in the SIP and the USDA Forest Service and USDOJ Bureau of Land Management anticipate that the SIP will be approved prior to reconducting activities within the SCAB. The USDA Forest Service and USDOJ Bureau of Land Management have requested written confirmation from the SCAQMD of the agency's commitment that the emissions will be included in the SIP update.

In lieu of receiving written confirmation from the SCAQMD to demonstrate conformity with the SIP by virtue of the inclusion of construction emissions within the SIP budgets for the SIP update, the Project sponsor (LADWP) will be required to obtain NO_x emission offsets to fully offset the NO_x emissions during the years when the *de minimis* threshold is exceeded. This measure has been included as an enforceable project mitigation measures in the proposed Project's Draft EIR Document. The measure will be included in the USDA Forest Service and USDOJ Bureau of Land Management's ROD, as follows:

Mitigation Measure AQ-4a: **General Conformity Offset Mitigation.** In the event that the final emission estimate for the selected Project Alternative as provided in the Project's Conformity Analysis exceeds the NO_x and/or VOC emission applicability thresholds, and assuming the SCAQMD does not provide confirmation that the Project's emissions are accounted for in the State Implementation Plan (SIP) emission estimates per 40 CFR §93.158(a)(1), then the Project will obtain emission reduction credits to fully offset the NO_x and/or VOC emissions per 40 CFR 93.158(a)(2) for the years that the Project has been estimated to exceed the NO_x and/or VOC emission applicability thresholds. Credits shall be submitted to the BLM and USFS for review and approval.

LADWP has several options for obtaining emission offset mitigation, including:

- Traditional NO_x emission reduction credits (ERCs) that are in units of lbs/day, where 1 lb/day equals 365 lbs/year. These credits can now be subdivided into short-term yearly credits for purchase. These credits are available at market-based prices.
- Reclaim Trading Credits (RTCs) that are in units of lbs and are year specific.
- Creation of new emission reduction credits, such as mobile source emission reduction credits (MSERCs), where considered enforceable by USEPA for purposes of General Conformity offsets, through methods such as the SCAQMD Regulation XVI Mobile Source Offset Programs or other methods similar to existing stationary source control programs such as the Carl Moyer Program.

While there are many options to obtain the necessary offset credits to fully offset the project's NO_x emissions, it is likely that RTCs will make up the bulk of the credits obtained by LADWP. As noted previously as the federal Lead Agencies, the USDA Forest Service and the USDOJ Bureau of Land Management will be required to enforce compliance with all mitigation measures contained in the ROD.

7.0 CONCLUSION

As demonstrated in this General Conformity Analysis, the estimated NO_x emissions associated with the Proposed Action within the SCAB will exceed the General Conformity *de minimis* threshold for 2013 and 2014. Emissions of other nonattainment pollutants during construction and operation are below their respective General Conformity *de minimis* thresholds for the SCAB and MDAB, as shown in Table 3. Therefore, they are considered to conform to the SIP.

The USDA Forest Service and the USDOJ Bureau of Land Management have determined that the Proposed Action conforms to the applicable SIP for NO_x emissions within the SCAB through the submittal of the emissions budget to the SCAQMD for inclusion in their update to the SIP for the 8-hour O₃ NAAQS.

Attachment A

Emission Calculations

Emission Calculation Assumptions

Proposed Project General Assumptions

1) Construction work days and schedule provided by LADWP/Power Engineers.

Offroad Equipment Emission Calculation Assumptions

1) Emission factors are the latest available from the SCAQMD website, where the next highest horsepower sized equipment given in the SCAQMD emission factor database are used for hourly emission factors.

2) Emission factors from each year assumed in the project schedule are used to calculate the annual emissions.

3) Equipment type, number, and usage estimates are used as estimated using equipment data and quantity estimates are from LADWP/Power Engineers. Equipment requirements were provided based on a 60-mile segment; emissions for each segment/alternative were estimated based on the ratio of the distance for that segment/alternative to 60 miles, assuming a certain emission rate per mile of construction based on heavy equipment and vehicles. It was assumed that the new transmission line would be constructed from end to end, and that one crew per activity would be working on the line at any given location.

4) The following vehicle types, which could be offroad vehicles are assumed to be onroad vehicles considering the project description, needs and location: water trucks and dump trucks.

Onroad Equipment Emission Calculations Assumptions

1) Emission factors derived from the EMFAC2007 Model, for the construction year in which construction occurs. It was assumed that workers would use light-duty trucks. Other vehicles were represented as light-duty trucks (category 1 and 2), medium-duty trucks, and heavy-duty trucks depending on size and usage.

2) Emission factors from each year assumed in the project schedule are used to calculate the annual emissions.

3) Trip estimates are based on LADWP estimates of crew size and onroad vehicle numbers and trips revised to create a consistent basis given certain variability between construction segment elements.

4) For simplification all onroad traffic for the project is assumed to occur within the jurisdiction of the specific project segment construction element.

Fugitive Dust Emission Calculations Assumptions

1) Unpaved road travel per trip is minimized to the extent feasible and shall range from zero for upgrades to paved substation sites to approximately 7.2 miles for construction segments within the ANF. Unpaved road distances were determined using GIS data for each construction site (tower, staging area, etc.) and employees were assumed to park personal vehicles on unpaved surfaces within staging areas requiring 0.1 mile of unpaved travel.

2) Unpaved road emission factors are calculated using the most current version of USEPA AP-42 Section 13.2.1 and use the following assumptions: 1) Silt content is assumed to be 8.5% on average (USEPA default level for construction site); and 2) average vehicle weight based on VMT estimate for unpaved roads

3) Paved road emission factors are calculated using the most current version of USEPA AP-42 Section 13.2.1 and use the following assumptions: 1) Silt loading is average for 5000-10000 ADT road; 2) average vehicle weight is calculated on VMT average basis.

4) Earthmoving emission factors are calculated using the recent version of USEPA AP-42 Section 11.9 for Dozing and Grading, and Section 13.2.4 for soil handling (drop emissions).

5) Specific assumptions related to the calculations, such as silt content or silt loading, are noted in the calculation sheets.

Helicopter Emission Calculations Assumptions

1) The type of helicopters and number of helicopter trips for tower helicopter construction are based on estimates provided by Power Engineers.

2) Helicopters were assumed to be used for reconductoring for all alternatives. Helicopters were not assumed to be used for Alternative 2 (Proposed Action). Helicopters were assumed to be used to construct towers for mitigation on Alternative 1 and Alternative 2A.

Emission Estimate Limitations

1) The project schedule has been used to represent when emissions and activity would occur.

2) The actual project construction schedule would have greater variability and activity overlap in each segment or subsegment as problems such as weather or other factors delay work and work delays are later compensated for and as foundation/tower/stringing/restoration crews work sequentially down each segment.

3) Emissions were calculated based on a standard 60-mile transmission line length, and ratios of segment/alternative length were used to calculate specific emissions for each segment/alternative. Emissions and equipment use could vary depending on conditions and distance to tower sites.

4) The annual emissions estimate for each air basin and for the ANF are estimated based on a certain progression and direction of activities in those construction elements that cross borders.

5) There are likely unknown project construction requirements, such as upgrading certain paved roads within the ANF, that are not currently included in the construction assumptions.

6) The helicopter emission factors come from a old source and use engines that do not match the helicopter engines being used, which may cause an overestimation of these emissions depending on the accuracy of the helicopter trip estimate. Unlike large fixed wing aircraft engines helicopter engines do not require emission testing by the ICAO so no new emission factors are readily available.

Table A-1
Summary of Emissions subject to General Conformity Determination

	Miles in Federal Lands	ROG tons (total)	CO tons (total)	NOX tons (total)	SOX tons (total)	PM10 tons (total)	PM2.5 tons (total)
2013							
Alternative 1							
KCAPCD	3.67	0.25	2.73	1.32	0.00	2.79	0.43
AVAQMD	0	0	0	0	0	0	0
SCAQMD	15.91	5.84	31.41	26.70	0.19	14.92	3.21
Alternative 2							
KCAPCD	3.67	0.25	2.73	1.32	0.00	2.79	0.43
AVAQMD	2.2	0.24	2.38	1.63	0.00	4.43	0.76
SCAQMD	12.99	1.04	11.35	6.02	0.01	15.34	2.34
Alternative 2A							
KCAPCD	3.67	0.25	2.73	1.32	0.00	2.79	0.43
AVAQMD	2.2	0.45	2.88	2.14	0.01	1.85	0.35
SCAQMD	12.99	2.34	15.91	11.22	0.06	11.48	2.00
Alternative 3							
KCAPCD	3.67	0.25	2.73	1.32	0.00	2.79	0.43
AVAQMD	0	0.00	0.00	0.00	0.00	0.00	0.00
SCAQMD	2	0.14	1.53	0.73	0.00	1.75	0.26
2014							
Reconductoring							
KCAPCD	3.67	1.27	4.61	5.19	0.04	2.60	0.64
AVAQMD	2.2	0.87	3.38	3.92	0.03	1.65	0.44
SCAQMD	12.99	4.65	16.56	20.56	0.16	5.71	2.00

Table A-2
Construction Heavy Equipment Emissions
New 230 kV Transmission Line
Barren Ridge Renewable Transmission Project

												Emission Factors											
Equipment	FUEL	HP	ROG (lb/hr)	CO (lb/hr)	NOX (lb/hr)	SOX (lb/hr)	PM10 (lb/hr)	PM2.5 (lb/hr)	CH4 (lb/hr)	N2O (lb/hr)	No of Equipment	Hrs Per Day	Days in Service	ROG tons (total)	CO tons (total)	NOX tons (total)	SOX tons (total)	PM10 tons (total)	PM2.5 tons (total)	CH4 tons (total)	N2O tons (total)		
Marshalling Yards - 2013																							
Crawler, Hydraulic, Rough Terrain, 35 Ton	DIESEL	125	0.1031	0.4821	0.7769	0.0009	0.0445	0.0362	80.3	0.0093	0.0738	1	2	270	0.028	0.130	0.210	0.000	0.012	0.011	22	0.003	
Excavator, Hydraulic, Rough Terrain, 35 Ton	DIESEL	75	0.0955	0.4327	0.5995	0.0007	0.0529	0.0471	196	0.0086	0.0570	1	6	270	0.077	0.350	0.486	0.001	0.043	0.038	51	0.007	
Motor Grader, Hydraulic, Rough Terrain, 35 Ton	DIESEL	85	0.0955	0.4327	0.5995	0.0007	0.0529	0.0471	196	0.0086	0.0570	1	6	270	0.077	0.350	0.486	0.001	0.043	0.038	51	0.007	
Motor, Auxiliary Power	Gasoline	5	0.0829	3.0838	0.0412	0.0001	0.0025	0.0022	172	0.0039	0.0039	1	1	270	0.011	0.016	0.006	0.000	0.000	0.000	1	0.001	
Subtotal Per Mile															0.00	0.02	0.02	0.00	0.00	0.00	2.08	0.00	
Road Work and Structure Pads - 2013																							
Crawler, Track Type, w/Blade (D8 Type)	DIESEL	165	0.1674	0.7448	1.2529	0.0014	0.0713	0.0517	121	0.0151	0.1160	2	6	160	0.161	0.715	1.203	0.001	0.068	0.061	18	0.014	
Motor Grader	DIESEL	110	0.1254	0.5310	0.7729	0.0009	0.0676	0.0601	332	0.0134	0.0734	1	3	160	0.030	0.127	0.185	0.000	0.018	0.014	16	0.003	
Excavator, Hydraulic, Rough Terrain, 35 Ton	DIESEL	75	0.0955	0.4327	0.5995	0.0007	0.0529	0.0471	196	0.0086	0.0570	1	6	270	0.077	0.350	0.486	0.001	0.043	0.038	51	0.007	
Backhoe, Self-Propelled, Hydraulic, Rough Terrain, 35 Ton	DIESEL	85	0.0955	0.4327	0.5995	0.0007	0.0529	0.0471	196	0.0086	0.0570	1	6	270	0.077	0.350	0.486	0.001	0.043	0.038	51	0.007	
Motor Grader, Hydraulic, Rough Terrain, 35 Ton	DIESEL	85	0.0955	0.4327	0.5995	0.0007	0.0529	0.0471	196	0.0086	0.0570	1	6	270	0.077	0.350	0.486	0.001	0.043	0.038	51	0.007	
Truck Dump, 10 Ton	DIESEL	235	0.1400	0.3837	1.2373	0.0019	0.0412	0.0367	102	0.0128	0.1175	2	4	160	0.090	0.246	0.362	0.001	0.026	0.023	107	0.008	
Subtotal Per Mile															0.42	1.85	3.19	0.00	0.18	0.16	362.40	0.30	
Subtotal Per Mile															0.01	0.01	0.05	0.00	0.00	6.04	0.01		
Guard Poles - 2013																							
Back-Hoe w/ Bucket	DIESEL	85	0.0694	0.3529	0.4821	0.0006	0.0383	0.0340	819	0.0053	0.0434	1	3	35	0.004	0.019	0.024	0.000	0.002	0.002	3	0.000	
Digger, Transmission Type, Truck Mount	DIESEL	190	0.2354	0.7069	2.2485	0.0025	0.0880	0.0783	329	0.0212	0.2136	1	3	35	0.012	0.037	0.118	0.000	0.005	0.004	12	0.001	
Crane, Hydraulic, Rough Terrain, 35 Ton	DIESEL	125	0.1031	0.4821	0.7769	0.0009	0.0445	0.0362	80.3	0.0093	0.0738	1	3	35	0.005	0.025	0.041	0.000	0.002	0.002	4	0.000	
Subtotal															0.02	0.08	0.18	0.00	0.01	0.01	16	0.001	
Subtotal Per Mile															0.00	0.00	0.00	0.00	0.00	0.00	0.31	0.00	
Foundations and Rebar Cages - 2013																							
Digger, Transmission Type, Truck Mount	DIESEL	190	0.2354	0.7069	2.2485	0.0025	0.0880	0.0783	329	0.0212	0.2136	2	8	180	0.339	1.021	3.238	0.004	0.127	0.113	321	0.031	
Crawler, Track Type, w/Blade (D8 Type)	DIESEL	165	0.1674	0.7448	1.2529	0.0014	0.0713	0.0517	121	0.0151	0.1160	1	4	180	0.060	0.268	0.451	0.000	0.026	0.023	44	0.005	
Back-Hoe w/ Bucket	DIESEL	85	0.0694	0.3529	0.4821	0.0006	0.0383	0.0340	819	0.0053	0.0434	1	3	180	0.019	0.085	0.123	0.000	0.010	0.009	14	0.002	
Truck Dump, 10 Ton	DIESEL	235	0.1400	0.3837	1.2373	0.0019	0.0412	0.0367	102	0.0128	0.1175	1	4	180	0.050	0.138	0.445	0.001	0.015	0.013	60	0.005	
Motor, Auxiliary Power	Gasoline	5	0.0829	3.0838	0.0412	0.0001	0.0025	0.0022	172	0.0039	0.0039	2	2	180	0.030	0.110	0.015	0.000	0.001	0.001	2	0.002	
Subtotal															0.50	2.63	4.27	0.00	0.18	0.16	440	0.04	
Subtotal Per Mile															0.01	0.04	0.07	0.00	0.00	0.00	7.34	0.01	
Steel (Hauling, Shake-Out, Light Assembly, Heavy Assembly, Erector) - 2013																							
Crawler, Hydraulic, 150 Ton	DIESEL	250	0.1040	0.2948	0.9948	0.0013	0.0351	0.0312	1318	0.0094	0.0845	1	6	180	0.056	0.159	0.537	0.001	0.019	0.017	61	0.005	
Excavator, Hydraulic, Rough Terrain, 35 Ton	DIESEL	125	0.1031	0.4821	0.7769	0.0009	0.0445	0.0362	80.3	0.0093	0.0738	4	4	180	0.149	0.684	1.119	0.001	0.064	0.057	116	0.013	
Motor, Auxiliary Power	Gasoline	5	0.0829	3.0838	0.0412	0.0001	0.0025	0.0022	172	0.0039	0.0039	2	2	180	0.030	0.110	0.015	0.000	0.001	0.001	2	0.002	
Compressor, Air	Gasoline	75	0.4860	7.8086	1.4021	0.0012	0.0099	0.0088	296	0.0167	0.0381	6	6	180	1.607	26.624	45.934	0.004	0.032	0.029	415	0.091	
Subtotal															1.84	27.59	6.21	0.01	0.12	0.11	593	0.11	
Subtotal Per Mile															0.03	0.48	0.10	0.00	0.00	0.00	9.88	0.01	
Conductor (Sheaves, Insulators, Stringing, Clipping, Dampers, Deadending) - 2013																							
Tension Machine, Conductor	DIESEL	135	0.0935	0.5873	0.8011	0.0012	0.0420	0.0376	107	0.0084	0.0761	1	3	135	0.019	0.119	0.162	0.000	0.009	0.008	22	0.002	
Tension Machine, Static	DIESEL	135	0.0935	0.5873	0.8011	0.0012	0.0420	0.0376	107	0.0084	0.0761	1	2	135	0.013	0.079	0.109	0.000	0.006	0.005	44	0.001	
Truck, Wire Puller, Rope, 3 Drum	DIESEL	310	0.2170	0.6362	1.7865	0.0027	0.0634	0.0563	226	0.0196	0.1697	1	2	135	0.054	0.186	0.362	0.000	0.013	0.011	55	0.004	
Truck, Wire Puller, 1 Drum	DIESEL	310	0.2170	0.6362	1.7865	0.0027	0.0634	0.0563	226	0.0196	0.1697	1	2	135	0.054	0.186	0.362	0.000	0.013	0.011	55	0.004	
Crawler, Track Type, w/Blade (D8 Type)	DIESEL	305	0.2542	0.9504	2.2389	0.0025	0.0868	0.0772	259	0.0229	0.2127	2	2	135	0.069	0.232	0.302	0.000	0.012	0.011	55	0.003	
Back-Hoe w/ Bucket	DIESEL	85	0.0694	0.3529	0.4821	0.0006	0.0383	0.0340	819	0.0053	0.0434	1	2	135	0.063	0.268	0.462	0.000	0.005	0.005	7	0.001	
Motor, Auxiliary Power	Gasoline	5	0.0829	3.0838	0.0412	0.0001	0.0025	0.0022	172	0.0039	0.0039	4	2	135	0.045	0.165	0.222	0.000	0.001	0.001	3	0.000	
Subtotal															0.37	2.83	2.70	0.00	0.12	0.12	346.35	0.03	
Subtotal Per Mile															0.01	0.05	0.04	0.00	0.00	0.00	5.77	0.00	
Wreck-Out (Conductions, Structures and Foundations)																							
Crawler, Track Type, w/Blade (D8 Type)	DIESEL	135	0.0935	0.5873	0.8011	0.0012	0.0420	0.0376	107	0.0084	0.0761	1	3	135	0.019	0.119	0.162	0.000	0.009	0.008	22	0.002	
Excavator, Hydraulic, Rough Terrain, 35 Ton	DIESEL	75	0.0955	0.4327	0.5995	0.0007	0.0529	0.0471	196	0.0086	0.0570	1	2	135	0.034	0.128	0.302	0.000	0.012	0.011	35	0.003	
Back-Hoe w/ Concrete Hammer	DIESEL	85	0.0694	0.3529	0.4821	0.0006	0.0383	0.0340	819	0.0053	0.0434	1	2	135	0.069	0.268	0.462	0.000	0.005	0.005	7	0.001	
Truck Dump, 10 Ton	DIESEL	235	0.1400	0.3837	1.2373	0.0019	0.0412	0.0367	102	0.0128	0.1175	1	4	180	0.050	0.138	0.445	0.001	0.015	0.013	60	0.005	
Crawler, Hydraulic, 150 Ton	DIESEL	250	0.1040	0.2948	0.9948	0.0013	0.0351	0.0312	1318	0.0094	0.0845	1	6	180	0.056	0.159	0.537	0.001	0.019	0.017	61	0.005	
Crane, Hydraulic, Rough Terrain, 35 Ton	DIESEL	125	0.1031	0.4821	0.7769	0.0009	0.0445	0.0362	80.3	0.0093	0.0738	3	3	135	0.063	0.263	0.293	0.000	0.027	0.024	49	0.008	
Motor, Auxiliary Power	Gasoline	5	0.0829	3.0838	0.0412	0.0001	0.0025	0.0022	172	0.0039	0.0039	4	2	135	0.045	0.165	0.222	0.000	0.001	0.001	3	0.000	
Subtotal															0.37	2.83	2.70	0.00	0.12	0.12	346.35	0.03	
Subtotal Per Mile															0.01	0.05	0.04	0.00	0.00	0.00	5.77	0.00	
Clean-up and Restoration - 2013																							
Crawler, Track Type, w/Blade (D8 Type)	DIESEL	235	0.1400	0.3837	1.2373	0.0019	0.0412	0.0367	102	0.0128	0.1175	1	4	135	0.038	0.104	0.334	0.001	0.011	0.010	45	0.003	
Excavator, Hydraulic, Rough Terrain, 35 Ton	DIESEL	165	0.1674	0.6668	0.8932	0.0013	0.0512	0.0455	505	0.0134	0.0848	1	4	135	0.033	0.130	0.247	0.000	0.014	0.011	30	0.003	
Motor Grader	DIESEL	85	0.0955	0.4327	0.5995	0.0007	0.0529	0.0471	196	0.0086	0.0570	1	6	135	0.068	0.302	0.507	0.001	0.029	0.026	49	0.006	
Motor, Auxiliary Power	Gasoline	5	0.0829	3.0838	0.0412	0.0001	0.0025	0.0022	172	0.0039	0.0039	1	1	135	0.006	0.028	0.003	0.000	0.000	0.000	0	0.000	
Motor Grader	DIESEL	110	0.1254	0.5310	0.7729	0.0009	0.0676	0.0601	332	0.0134	0.0734	1	6	135	0.051	0.215	0.313	0.000	0.027	0.024	30	0.005	
Subtotal Per Mile															0.19	1.01	1.40	0.00	0.08	0.07	155.03	0.02	
Subtotal Per Mile															0.00	0.02	0.02	0.00	0.00	0.00	2.58	0.00	

Table A-3
Construction Heavy Equipment Emissions
Alternative 2 - Temporary Transmission Line
Barron Ridge Renewable Transmission Project

Equipment	FUEL	HP	Emission Factors										Emission tons (total)										CH4 (total)	N2O (total)
			ROG (lb/hr)	CO (lb/hr)	NOX (lb/hr)	SOX (lb/hr)	PM10 (lb/hr)	PM2.5 (lb/hr)	CO2 (lb/hr)	CH4 (lb/hr)	N2O (lb/hr)	No of Equipment	Hrs Per Day	Service /Day	ROG tons (total)	CO tons (total)	NOX tons (total)	SOX tons (total)	PM10 tons (total)	PM2.5 tons (total)	CO2 tons (total)			
Marshalling Yards - 2013																								
Crane Hydraulic, Rough Terrain, 35 Ton	DIESEL	125	0.1031	0.4821	0.7769	0.0009	0.0445	0.03962	80.3	0.0093	0.7338	1	5	15	0.004	0.018	0.029	0.000	0.002	0.001	3	0.000	0.003	
Front, 5 ton	DIESEL	75	0.0955	0.4327	0.5995	0.0007	0.0529	0.0471196	62.4	0.0086	0.0570	1	5	15	0.004	0.016	0.022	0.000	0.002	0.002	2	0.000	0.002	
Subtotal															0.01	0.03	0.05	0.00	0.00	0.00	5.35	0.00	0.00	
Dust Control																								
Water Truck	DIESEL	175	0.1674	0.7448	1.2529	0.0014	0.0713	0.0634742	121	0.0151	0.1190	1	5	58	0.024	0.108	0.182	0.000	0.010	0.009	18	0.002	0.017	
Subtotal															0.02	0.11	0.18	0.00	0.01	0.01	17.57	0.00	0.02	
Dig Wood Pole Holes - 2013																								
Digger, Transmission Type, Truck Mount	DIESEL	190	0.2354	0.7089	2.2485	0.0025	0.0880	0.0783329	223	0.0212	0.2136	1	6	27	0.019	0.057	0.182	0.000	0.007	0.006	18	0.002	0.010	
Subtotal															0.02	0.06	0.18	0.00	0.01	0.01	18	0.00	0.02	
Dig and Install Anchor Bolt Foundations - 2013																								
Digger, Transmission Type, Truck Mount	DIESEL	190	0.2354	0.7089	2.2485	0.0025	0.0880	0.0783329	223	0.0212	0.2136	1	6	16	0.011	0.034	0.108	0.000	0.004	0.004	11	0.001	0.010	
Back Hoe w/ Bucket	DIESEL	85	0.0994	0.3529	0.4565	0.0006	0.0383	0.0340819	51.7	0.0063	0.0434	1	2	16	0.001	0.005	0.007	0.000	0.001	0.001	1	0.000	0.001	
Truck Dump, 10 Ton	DIESEL	235	0.1400	0.3837	1.2373	0.0019	0.0412	0.0367012	167	0.0126	0.1175	1	2	16	0.002	0.008	0.021	0.000	0.001	0.001	3	0.000	0.002	
Motor Auxiliary Power	Gasoline	5	0.0029	0.0838	0.0412	0.0001	0.0025	0.0022172	4.7333	0.0047	0.0039	1	2	16	0.001	0.004	0.011	0.000	0.000	0.000	0	0.000	0.000	
Subtotal															0.02	0.10	0.14	0.00	0.01	0.00	14	0.00	0.01	
Haul Wood and Steel Poles - 2013																								
Crane Hydraulic, Rough Terrain, 35 Ton	DIESEL	125	0.1031	0.4821	0.7769	0.0009	0.0445	0.03962	80.3	0.0093	0.7338	1	2	15	0.002	0.007	0.012	0.000	0.001	0.001	1	0.000	0.001	
Subtotal															0.00	0.01	0.01	0.00	0.00	0.00	1	0.00	0.00	
Frame/Assemble Wood and Steel Poles - 2013																								
Crane Hydraulic, Rough Terrain, 35 Ton	DIESEL	125	0.1031	0.4821	0.7769	0.0009	0.0445	0.03962	80.3	0.0093	0.7338	1	2	15	0.002	0.007	0.012	0.000	0.001	0.001	1	0.000	0.001	
Subtotal															0.00	0.01	0.01	0.00	0.00	0.00	1	0.00	0.00	
Cleanup at Pole Holes and Anchor Bolt Foundation Holes																								
Back Hoe w/ Bucket	DIESEL	85	0.0994	0.3529	0.4565	0.0006	0.0383	0.0340819	51.7	0.0063	0.0434	1	3	10	0.001	0.005	0.007	0.000	0.001	0.001	1	0.000	0.001	
Truck Dump, 10 Ton	DIESEL	235	0.1400	0.3837	1.2373	0.0019	0.0412	0.0367012	167	0.0126	0.1175	1	2	10	0.001	0.004	0.012	0.000	0.000	0.000	2	0.000	0.001	
Subtotal															0.00	0.01	0.01	0.00	0.00	0.00	1	0.00	0.00	
Install New Transmission Conductor (Sheaves, Insulators, Stringing, Clipping, Dampers, Deadending) - 2013																								
Tension Machine, Conductor	DIESEL	135	0.0935	0.3873	0.8011	0.0012	0.0420	0.0378654	107	0.0084	0.761	1	2	10	0.001	0.006	0.008	0.000	0.000	0.000	1	0.000	0.001	
Truck Wire Puller, Rope 3 Drum	DIESEL	310	0.2170	0.6362	1.7865	0.0027	0.0634	0.0561826	272	0.0186	0.697	1	2	10	0.002	0.006	0.018	0.000	0.001	0.001	3	0.000	0.002	
Truck Wire Puller, 1 Drum	DIESEL	310	0.2170	0.6362	1.7865	0.0027	0.0634	0.0561826	272	0.0186	0.697	1	2	10	0.002	0.006	0.018	0.000	0.001	0.001	3	0.000	0.002	
Crane Hydraulic, Rough Terrain, 35 Ton	DIESEL	125	0.1031	0.4821	0.7769	0.0009	0.0445	0.03962	80.3	0.0093	0.7338	1	2	10	0.001	0.004	0.012	0.000	0.001	0.001	1	0.000	0.001	
Motor Auxiliary Power	Gasoline	5	0.0029	0.0838	0.0412	0.0001	0.0025	0.0022172	4.7333	0.0047	0.0039	1	2	10	0.001	0.004	0.011	0.000	0.000	0.000	0	0.000	0.000	
Subtotal															0.02	0.03	0.07	0.00	0.00	0.00	9	0.00	0.01	
Install New Distribution Services - 2013																								
Crane Hydraulic, Rough Terrain, 35 Ton	DIESEL	125	0.1031	0.4821	0.7769	0.0009	0.0445	0.03962	80.3	0.0093	0.7338	2	3	10	0.003	0.014	0.023	0.000	0.001	0.001	2	0.000	0.002	
Motor Auxiliary Power	Gasoline	5	0.0029	0.0838	0.0412	0.0001	0.0025	0.0022172	4.7333	0.0047	0.0039	2	2	10	0.002	0.008	0.02	0.000	0.000	0.000	0	0.000	0.000	
Subtotal															0.00	0.08	0.02	0.00	0.00	0.00	2.51	0.00	0.00	
Remove Old Wood/Steel Poles																								
Crane Hydraulic, Rough Terrain, 35 Ton	DIESEL	125	0.1031	0.4821	0.7769	0.0009	0.0445	0.03962	80.3	0.0093	0.7338	1	6	76	0.024	0.110	0.177	0.000	0.010	0.009	18	0.002	0.017	
Subtotal															0.02	0.11	0.18	0.00	0.01	0.01	18.32	0.00	0.02	
Install and Remove Guard Pole Structures																								
Digger, Transmission Type, Truck Mount	DIESEL	190	0.2354	0.7089	2.2485	0.0025	0.0880	0.0783329	223	0.0212	0.2136	1	3	5	0.002	0.005	0.017	0.000	0.001	0.001	2	0.000	0.002	
Back Hoe w/ Bucket	DIESEL	85	0.0994	0.3529	0.4565	0.0006	0.0383	0.0340819	51.7	0.0063	0.0434	1	4	5	0.001	0.004	0.005	0.000	0.000	0.000	1	0.000	0.000	
Truck Dump, 10 Ton	DIESEL	235	0.1400	0.3837	1.2373	0.0019	0.0412	0.0367012	167	0.0126	0.1175	1	4	5	0.001	0.004	0.012	0.000	0.000	0.000	2	0.000	0.001	
Subtotal															0.00	0.01	0.03	0.00	0.00	0.00	4	0.00	0.00	

11/28/2014 - 10/28/2014

		Emission Factors										Emission, tons (total)									
FUEL	HP	ROG (lb/hr)	CQ (lb/hr)	NOX (lb/hr)	SOX (lb/hr)	PM2.5 (lb/hr)	CO2 (lb/hr)	CH4 (lb/hr)	N2O (lb/hr)	No of Equipment	Hrs Per Day	Days in Service	ROG tons (total)	CO tons (total)	NOX tons (total)	SOX tons (total)	PM10 tons (total)	PM2.5 tons (total)	CO2 tons (total)	CH4 tons (total)	N2O tons (total)
Harvesting Yards - 2014																					
DIESEL	125	0.0377	0.4806	0.7306	0.0009	0.0412	0.0366241	80.3	0.0088	0.0694	1	2	170	0.017	0.062	0.124	0.000	0.007	0.008	14	0.001
DIESEL	75	0.0877	0.4292	0.5812	0.0007	0.0474	0.0421875	62.4	0.0079	0.0533	1	6	170	0.045	0.216	0.266	0.000	0.024	0.032	32	0.004
DIESEL	85	0.0877	0.4292	0.5812	0.0007	0.0474	0.0421875	62.4	0.0079	0.0533	1	6	170	0.045	0.216	0.266	0.000	0.024	0.032	32	0.004
Gasoline	5	0.0829	3.0838	0.0412	0.0001	0.0025	0.0022172	4.7333	0.0047	0.0039	1	1	170	0.007	0.252	0.000	0.000	0.000	0.000	0.000	0.000
Subtotal													0.111	0.76	0.91	0.00	0.06	0.05	77.76	0.01	0.07
Subtotal per mile													0.00	0.01	0.01	0.00	0.00	0.00	1.04	0.00	0.00
Road Work and Structure Pads - 2014																					
DIESEL	165	0.1594	0.7413	1.1957	0.0014	0.0663	0.0588875	121	0.0144	0.1126	1	6	60	0.036	0.133	0.133	0.000	0.012	0.011	22	0.003
DIESEL	110	0.1166	0.5268	0.7270	0.0009	0.0614	0.0546268	79.0	0.0105	0.0804	1	6	60	0.026	0.094	0.094	0.000	0.008	0.007	7	0.001
DIESEL	85	0.0934	0.3503	0.4252	0.0006	0.0337	0.0299050	51.7	0.0057	0.0501	1	6	60	0.011	0.063	0.077	0.000	0.006	0.005	7	0.001
DIESEL	85	0.0934	0.3503	0.4252	0.0006	0.0337	0.0299050	51.7	0.0057	0.0501	1	6	60	0.011	0.063	0.077	0.000	0.006	0.005	7	0.001
DIESEL	165	0.1134	0.6650	0.8323	0.0013	0.0761	0.0327981	132	0.0102	0.0791	1	4	60	0.016	0.080	0.100	0.000	0.005	0.005	13	0.001
DIESEL	235	0.1326	0.3761	1.0406	0.0019	0.0366	0.0327981	167	0.0120	0.1050	1	4	60	0.016	0.045	0.133	0.000	0.004	0.004	20	0.001
Subtotal													0.08	0.37	0.59	0.00	0.03	0.03	71.32	0.01	0.06
Subtotal per mile													0.00	0.00	0.01	0.00	0.00	0.95	0.00	0.00	0.00
Guard Poles - 2014																					
DIESEL	85	0.0634	0.3503	0.4252	0.0006	0.0337	0.0299616	51.7	0.0057	0.0404	1	3	35	0.003	0.018	0.022	0.000	0.002	0.002	3	0.000
DIESEL	190	0.2226	0.6786	2.0933	0.0025	0.0813	0.0723907	223	0.0201	0.1989	1	3	35	0.005	0.025	0.036	0.000	0.004	0.004	12	0.001
DIESEL	125	0.0877	0.4806	0.7306	0.0009	0.0412	0.0366241	80.3	0.0088	0.0694	1	3	35	0.005	0.025	0.036	0.000	0.002	0.002	4	0.000
Subtotal													0.02	0.08	0.17	0.00	0.01	0.01	19	0.00	0.02
Subtotal per mile													0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00
Windbreak Out (Conductors, Structures and Foundations) - 2014																					
DIESEL	135	0.0668	0.6867	0.7476	0.0012	0.0374	0.0333234	107	0.0078	0.0710	1	3	105	0.014	0.092	0.118	0.000	0.006	0.005	17	0.001
DIESEL	310	0.2065	0.6134	1.5945	0.0027	0.0567	0.0504704	272	0.0188	0.1515	1	8	105	0.047	0.258	0.276	0.001	0.024	0.021	114	0.008
DIESEL	310	0.2065	0.6134	1.5945	0.0027	0.0567	0.0504704	272	0.0188	0.1515	1	8	105	0.047	0.258	0.276	0.001	0.024	0.021	114	0.008
DIESEL	310	0.2065	0.6134	1.5945	0.0027	0.0567	0.0504704	272	0.0188	0.1515	1	8	105	0.047	0.258	0.276	0.001	0.024	0.021	114	0.008
DIESEL	310	0.2065	0.6134	1.5945	0.0027	0.0567	0.0504704	272	0.0188	0.1515	1	8	105	0.047	0.258	0.276	0.001	0.024	0.021	114	0.008
DIESEL	310	0.2065	0.6134	1.5945	0.0027	0.0567	0.0504704	272	0.0188	0.1515	1	8	105	0.047	0.258	0.276	0.001	0.024	0.021	114	0.008
DIESEL	305	0.2420	0.8895	2.8937	0.0025	0.0799	0.0710446	256	0.0218	0.1860	1	2	90	0.029	0.160	0.166	0.000	0.007	0.009	23	0.003
DIESEL	305	0.2420	0.8895	2.8937	0.0025	0.0799	0.0710446	256	0.0218	0.1860	1	2	90	0.029	0.160	0.166	0.000	0.007	0.009	23	0.003
DIESEL	305	0.2420	0.8895	2.8937	0.0025	0.0799	0.0710446	256	0.0218	0.1860	1	2	90	0.029	0.160	0.166	0.000	0.007	0.009	23	0.003
DIESEL	85	0.0934	0.3503	0.4252	0.0006	0.0337	0.0299050	51.7	0.0057	0.0501	1	6	60	0.011	0.063	0.077	0.000	0.006	0.005	7	0.001
DIESEL	125	0.0877	0.4806	0.7306	0.0009	0.0412	0.0366241	80.3	0.0088	0.0694	1	3	35	0.005	0.025	0.036	0.000	0.002	0.002	4	0.000
Gasoline	5	0.0829	3.0838	0.0412	0.0001	0.0025	0.0022172	4.7333	0.0047	0.0039	1	2	90	0.020	0.76	0.96	0.00	0.05	0.05	197	0.01
Subtotal													0.16	0.82	1.34	0.00	0.06	0.05	197	0.01	0.13
Subtotal per mile													0.00	0.01	0.02	0.00	0.00	0.00	2.82	0.00	0.30
Steel Milling, Shave-Out, Light Assembly, Heavy Assembly, Erection - 2014																					
DIESEL	150	0.0976	0.2817	0.7306	0.0013	0.0317	0.0281935	112	0.0080	0.0863	1	6	90	0.026	0.076	0.245	0.000	0.009	0.008	30	0.024
DIESEL	125	0.0877	0.4806	0.7306	0.0009	0.0412	0.0366241	80.3	0.0088	0.0694	1	6	90	0.026	0.076	0.245	0.000	0.009	0.008	30	0.024
DIESEL	125	0.0877	0.4806	0.7306	0.0009	0.0412	0.0366241	80.3	0.0088	0.0694	1	6	90	0.026	0.076	0.245	0.000	0.009	0.008	30	0.024
Gasoline	5	0.0829	3.0838	0.0412	0.0001	0.0025	0.0022172	4.7333	0.0047	0.0039	2	6	90	0.015	0.555	0.007	0.000	0.000	0.000	1	0.001
Gasoline	75	0.0660	7.9046	1.4021	0.0012	0.0069	0.0084296	128.0617	0.0281	0.1332	6	6	90	0.804	12.812	2.271	0.002	0.016	0.014	207	0.046
Subtotal													0.92	13.76	3.05	0.00	0.05	0.05	208	0.08	0.23
Subtotal per mile													0.01	0.17	0.03	0.00	0.00	0.00	2.36	0.00	0.30
Tension Machine, Striping, Clipping, Campers, Deadheading - 2014																					
DIESEL	135	0.0668	0.5867	0.7476	0.0012	0.0374	0.0333234	107	0.0078	0.0710	1	3	90	0.012	0.079	0.101	0.000	0.005	0.004	14	0.001
DIESEL	135	0.0668	0.5867	0.7476	0.0012	0.0374	0.0333234	107	0.0078	0.0710	1	3	90	0.012	0.079	0.101	0.000	0.005	0.004	14	0.001
DIESEL	310	0.2065	0.6134	1.5945	0.0027	0.0567	0.0504704	272	0.0188	0.1515	1	2	90	0.028	0.093	0.216	0.000	0.008	0.007	37	0.003
DIESEL	310	0.2065	0.6134	1.5945	0.0027	0.0567	0.0504704	272	0.0188	0.1515	1	2	90	0.028	0.093	0.216	0.000	0.008	0.007	37	0.003
DIESEL	310	0.2065	0.6134	1.5945	0.0027	0.0567	0.0504704	272	0.0188	0.1515	1	2	90	0.028	0.093	0.216	0.000	0.008	0.007	37	0.003
DIESEL	310	0.2065	0.6134	1.5945	0.0027	0.0567	0.0504704	272	0.0188	0.1515	1	2	90	0.028	0.093	0.216	0.000	0.008	0.007	37	0.003
DIESEL	310	0.2065	0.6134	1.5945	0.0027	0.0567	0.0504704	272	0.0188	0.1515	1	2	90	0.028	0.093	0.216	0.000	0.008	0.007	37	0.003
DIESEL	305	0.2420	0.8895	2.8937	0.0025	0.0799	0.0710446	256	0.0218	0.1860	1	2	90	0.029	0.160	0.166	0.000	0.007	0.009	23	0.003
DIESEL	305	0.2420	0.8895	2.8937	0.0025	0.0799	0.0710446	256	0.0218	0.1860	1	2	90	0.029	0.160	0.166	0.000	0.007	0.009	23	0.003
DIESEL	305	0.2420	0.8895	2.8937	0.0025	0.0799	0.0710446	256	0.0218	0.1860	1	2	90	0.029	0.160	0.166	0.000	0.007	0.009	23	0.003
DIESEL	85	0.0934	0.3503	0.4252	0.0006	0.0337	0.0299050	51.7	0.0057	0.0501	1	6	60	0.011	0.063	0.077	0.000	0.006	0.005	7	0.001
DIESEL	125	0.0877	0.4806	0.7306	0.0009	0.0412	0.0366241	80.3	0.0088	0.0694	1	3	35	0.005	0.025	0.036	0.000	0.002	0.002	4	0.000
Gasoline	5	0.0829	3.0838	0.0412	0.0001	0.0025	0.0022172	4.7333	0.0047	0.0039	4	2	90	0.040	0.16	0.296	0.000	0.017	0.015	33	0.004
Subtotal													0.16	0.82	1.34	0.00	0.06	0.05	197	0.01	0.13
Subtotal per mile													0.00	0.01	0.02	0.00	0.00	0.00	2.82	0.00	0.30
Cleanup and Restoration - 2014																					
DIESEL	235	0.1326	0.3761	1.0406	0.0019	0.0366	0.0327981	167	0.0120	0.1050	1	4	85	0.023	0.064	0.185	0.000	0.006	0.006	28	0.002
DIESEL	165	0.1166	0.5268	0.7270	0.0009	0.0614	0.0546268	79.0	0.0105	0.0804	1	4	85	0.023	0.064	0.185	0.000	0.006	0.006	28	0.002
DIESEL	165	0.1166	0.5268	0.7270	0.0009	0.0614	0.0546268	79.0	0.0105	0.0804	1	4	85	0.023	0.064	0.185	0.000	0.006	0.006	28	0.002
DIESEL	165	0.1166	0.5268	0.7270	0.0009	0.0614	0.0546268	79.0	0.0105	0.0804	1	4	85	0.023	0.064	0.185	0.000	0.006	0.006	28	0.002
Gasoline	5	0.0829	3.0838	0.0412	0.0001	0.0025	0.0022172	4.7333	0.0047	0.0039	1	6	85	0.041	0.189	0.302	0.000	0.			

Table A-5
Fugitive Dust Emission Calculation Assumptions
Barren Ridge Renewable Transmission Project

Activity Assumptions for Fugitive Dust Sources	Segment						
	A	B	C	D	G	G/2A	I
Proposed Activity Sites and Areas							
Transmission Line Distance, Miles	13.25	26.5	21.68	48	20.8	6.6	31.86
Portion of line in KCAPCD	1	0.766	1	0.261			
Portion of line in AVAQMD		0.234		0.275	0.298	0.4848485	0.556
Portion of line in SCAQMD				0.464	0.702	0.5151515	0.444
Access Roads							
Transmission Line Access Roads, miles	19.88	39.75	31.89	108.525	73.685	23.380817	128.26
Staging Areas (assume 1 per mile)							
Acres of disturbance							
Assume 1 acre per staging area	13.00	26.00	21.00	48.00	20.00	6.00	31.00
Portable Helicopter Landing Sites (Segments D, G/2A, and H Only)							
4 per mile, 20 x 20 feet, clearing of 0.73 acres				28.032		12.556	
Pullout Sites							
7 total				7		7	
Fly Yards							
Type I - 0.02 acres (assume all Type I for conservative purposes)				0.192		0.086	
Fueling Station - assume 3 - 4.6 acres				13.8		13.8	
Hydrant Yard - 32 acres				32		32	
Reitano Yard - 23 acres				23		23	
Wire Stringing Sites							
Assume 1 per mile, 0.74 acres per site				7.104		3.182	
Fueling Sites							
0.66 acres per mile				6.336		2.838	
Transmission Structure Sites							
Assume average of 5 per mile, 1 acre per site plus 0.22	80.83	161.65	132.25	292.80	126.88	40.26	194.35
Guard Structure at Major Crossings							
0.3 acres per mile	3.98	7.95	6.50	14.40	6.24	1.98	9.56
Total Disturbed Acreage	97.80	195.60	159.75	355.20	153.12	48.24	234.90
Maximum Disturbed Acreage - Current Estimates	86.45	172.25	209.3	303.64	140.15	41.46	261.07
Transmission Structures							
Cubic Yards of Excavation							
Assume average of 4.5 per mile	59	119	97	216	93	29	143
Assume 35 cubic yards per structure	2065	4165	3395	7560	3255	1015	5005
Assume an average of 7 structures excavated per day							
Total cubic yards/day = 245							

Table A-6
Fugitive Dust Emissions by Activity
Barren Ridge Renewable Transmission Project

Staging Areas and Transmission Pole Sites							
Source: "Improvement of Specific Emission Factors (BACM Project No. 1) Final Report" (MRI 1996)							
	Activity Days/Month		22				
E = Level 2 factor = tons PM10/acre-month	0.011		tons/acre-day				
F = 0.21 for PM2.5	0.00231		tons/acre-day				
Control Effectiveness = 61% (watering 3x daily)							
Segment	A	B	C	D	G	G/2A	I
Total Acreage Disturbed	97.80	195.60	159.75	465.66	153.12	135.70	234.90
Acres/month	8.15	16.30	13.31	38.81	12.76	11.31	19.58
Acres/day	0.37	0.74	0.61	1.76	0.58	0.51	0.89
PM10, total tons	0.42	0.84	0.69	2.00	0.66	0.58	1.01
PM2.5, total tons	0.09	0.18	0.14	0.42	0.14	0.12	0.21
PM10, lbs/day	3.18	6.36	5.19	15.13	4.98	4.41	7.63
PM2.5, lbs/day	0.67	1.33	1.09	3.18	1.05	0.93	1.60
Grading of Proposed Access Roads							
Source: URBEMIS Model, Version 9.2.4 (Rimpo and Associates 2007)							
E =	20		lbs/acre-day				
Assume grading required for 20 feet width							
Control Effectiveness = 61% (watering 3x daily)							
Segment	A	B	C	D	G	G/2A	I
Minus Mileage for Helicopter Construction				9.60		4.30	
Acres of grading required	48.18	96.36	77.31	239.82	178.63	46.26	310.93
Acres/month	4.02	8.03	6.44	19.98	14.89	3.85	25.91
Acres/day	0.18	0.37	0.29	0.91	0.68	0.18	1.18
PM10, total tons	0.19	0.38	0.30	0.94	0.70	0.18	1.21
PM2.5, total tons	0.04	0.08	0.06	0.20	0.15	0.04	0.25
PM10, lbs/day	1.42	2.85	2.28	7.09	5.28	1.37	9.19
PM2.5, lbs/day	0.30	0.60	0.48	1.49	1.11	0.29	1.93
Excavation							
Source: SCAQMD CEQA Handbook, Table A9-9-F							
PM10 E = 0.75 x 0.0021 (d^0.7)/(M^0.3)	0.0023057	lbs PM10/yd3					
PM2.5 E = 0.017 x 0.0021 (d^0.7)/(M^0.3)	5.226E-05	lbs PM2.5/yd3					
d = drop height = 5 ft (estimated)							
M = 12%							
Segment	A	B	C	D	G	G/2A	I
Cubic yards of excavation	2065	4165	3395	7560	3255	1015	5005
Cubic yards/day maximum	245	245	245	245	245	245	245
PM10, total tons	0.00	0.00	0.00	0.01	0.00	0.00	0.01
PM2.5, total tons	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PM10, lbs/day	0.56	0.56	0.56	0.56	0.56	0.56	0.56
PM2.5, lbs/day	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Dozer							
Source: AP-42, Section 11.9, removal of overburden							
E = k x (s)^1.5/(M)^1.4 for PM10	1.91	lb/hr					
E = k x 5.7 x (s)^1.2/(M)^1.3 for PM2.5	0.84	lb/hr					
s = 16% (farm roads)							
M = 10% (assuming watering for mitigation)							
Total Hours of Dozer Use for 60-mile segment	4260						
Hours of Dozer Use per Segment							
Maximum Hours/day of Dozer Use	12.00						
Segment	A	B	C	D	G	G/2A	I
PM10, total tons	0.90	1.80	1.47	3.26	1.41	0.45	2.16
PM2.5, total tons	0.39	0.79	0.64	1.42	0.62	0.20	0.95
PM10, lbs/day	22.93	22.93	22.93	22.93	22.93	22.93	22.93
PM2.5, lbs/day	10.03	10.03	10.03	10.03	10.03	10.03	10.03
Total Fugitive Dust per Segment	A	B	C	D	G	G/2A	I
PM10, lbs/day	28.10	32.70	30.97	45.72	33.75	29.27	40.32
PM2.5, lbs/day	11.01	11.97	11.61	14.71	12.19	11.25	13.57
PM10, total tons	1.51	3.02	2.46	6.20	2.77	1.21	4.39
PM2.5, total tons	0.52	1.04	0.85	2.04	0.90	0.36	1.41

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Year	No.	Description	2017		2016		2015		2014		2013		2012		2011		2010		2009		2008		2007		2006		2005		2004		2003		2002		2001		2000		1999		1998		1997		1996		1995		1994		1993		1992		1991		1990		1989		1988		1987		1986		1985		1984		1983		1982		1981		1980		1979		1978		1977		1976		1975		1974		1973		1972		1971		1970		1969		1968		1967		1966		1965		1964		1963		1962		1961		1960		1959		1958		1957		1956		1955		1954		1953		1952		1951		1950		1949		1948		1947		1946		1945		1944		1943		1942		1941		1940		1939		1938		1937		1936		1935		1934		1933		1932		1931		1930		1929		1928		1927		1926		1925		1924		1923		1922		1921		1920		1919		1918		1917		1916		1915		1914		1913		1912		1911		1910		1909		1908		1907		1906		1905		1904		1903		1902		1901		1900		1899		1898		1897		1896		1895		1894		1893		1892		1891		1890		1889		1888		1887		1886		1885		1884		1883		1882		1881		1880		1879		1878		1877		1876		1875		1874		1873		1872		1871		1870		1869		1868		1867		1866		1865		1864		1863		1862		1861		1860		1859		1858		1857		1856		1855		1854		1853		1852		1851		1850		1849		1848		1847		1846		1845		1844		1843		1842		1841		1840		1839		1838		1837		1836		1835		1834		1833		1832		1831		1830		1829		1828		1827		1826		1825		1824		1823		1822		1821		1820		1819		1818		1817		1816		1815		1814		1813		1812		1811		1810		1809		1808		1807		1806		1805		1804		1803		1802		1801		1800		1799		1798		1797		1796		1795		1794		1793		1792		1791		1790		1789		1788		1787		1786		1785		1784		1783		1782		1781		1780		1779		1778		1777		1776		1775		1774		1773		1772		1771		1770		1769		1768		1767		1766		1765		1764		1763		1762		1761		1760		1759		1758		1757		1756		1755		1754		1753		1752		1751		1750		1749		1748		1747		1746		1745		1744		1743		1742		1741		1740		1739		1738		1737		1736		1735		1734		1733		1732		1731		1730		1729		1728		1727		1726		1725		1724		1723		1722		1721		1720		1719		1718		1717		1716		1715		1714		1713		1712		1711		1710		1709		1708		1707		1706		1705		1704		1703		1702		1701		1700		1699		1698		1697		1696		1695		1694		1693		1692		1691		1690		1689		1688		1687		1686		1685		1684		1683		1682		1681		1680		1679		1678		1677		1676		1675		1674		1673		1672		1671		1670		1669		1668		1667		1666		1665		1664		1663		1662		1661		1660		1659		1658		1657		1656		1655		1654		1653		1652		1651		1650		1649		1648		1647		1646		1645		1644		1643		1642		1641		1640		1639		1638		1637		1636		1635		1634		1633		1632		1631		1630		1629		1628		1627		1626		1625		1624		1623		1622		1621		1620		1619		1618		1617		1616		1615		1614		1613		1612		1611		1610		1609		1608		1607		1606		1605		1604		1603		1602		1601		1600		1599		1598		1597		1596		1595		1594		1593		1592		1591		1590		1589		1588		1587		1586		1585		1584		1583		1582		1581		1580		1579		1578		1577		1576		1575		1574		1573		1572		1571		1570		1569		1568		1567		1566		1565		1564		1563		1562		1561		1560		1559		1558		1557		1556		1555		1554		1553		1552		1551		1550		1549		1548		1547		1546		1545		1544		1543		1542		1541		1540		1539		1538		1537		1536		1535		1534		1533		1532		1531		1530		1529		1528		1527		1526		1525		1524		1523		1522		1521		1520		1519		1518		1517		1516		1515		1514		1513		1512		1511		1510		1509		1508		1507		1506		1505		1504		1503		1502		1501		1500		1499		1498		1497		1496		1495		1494		1493		1492		1491		1490		1489		1488		1487		1486		1485		1484		1483		1482		1481		1480		1479		1478		1477		1476		1475		1474		1473		1472		1471		1470		1469		1468		1467		1466		1465		1464		1463		1462		1461		1460		1459		1458		1457		1456		1455		1454		1453		1452		1451		1450		1449		1448		1447		1446		1445		1444		1443		1442		1441		1440		1439		1438		1437		1436		1435		1434		1433		1432		1431		1430		1429		1428		1427		1426		1425		1424		1423		1422		1421		1420		1419		1418		1417		1416		1415		1414		1413		1412		1411		1410		1409		1408		1407		1406		1405		1404		1403		1402		1401		1400		1399		1398		1397		1396		1395		1394		1393		1392		1391		1390		1389		1388		1387		1386		1385		1384		1383		1382		1381		1380		1379		1378		1377		1376		1375		1374		1373		1372		1371		1370		1369		1368		1367		1366		1365		1364		1363		1362		1361		1360		1359		1358		1357		1356		1355		1354		1353		1352		1351		1350		1349		1348		1347		1346		1345		1344		1343		1342		1341		1340		1339		1338		1337		1336		1335		1334		1333		1332		1331		1330		1329		1328		1327		1326		1325		1324		1323		1322		1321		1320		1319		1318		1317		1316		1315		1314		1313		1312		1311		1310		1309		1308		1307		1306		1305		1304		1303		1302		1301		1300		1299		1298		1297		1296		1295		1294		1293		1292		1291		1290		1289		1288		1287		1286		1285		1284		1283		1282		1281		1280		1279		1278		1277		1276		1275		1274		1273		1272		1271		1270		1269		1268		1267		1266		1265		1264		1263		1262		1261		1260		1259		1258		1257		1256		1255		1254		1253		1252		1251		1250		1249		1248		1247		1246		1245		1244		1243		1242		1241		1240		1239		1238		1237		1236		1235		1234		1233		1232		1231		1230		1229		1228		1227		1226		1225		1224		1223		1222		1221		1220		1219		1218		1217		1216		1215		1214		1213		1212		1211		1210		1209		1208		1207		1206		1205		1204		1203		1202		1201		1200		1199		1198		1197		1196		1195		1194		1193		1192		1191		1190		1189		1188	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Task Category	Task Name	No. of Mileage	Period	Q1		Q2		Q3		Q4		Q5		Q6		Q7		Q8		Q9		Q10		Q11		Q12		Q13		Q14		Q15		Q16		Q17		Q18		Q19		Q20		Q21		Q22		Q23		Q24		Q25		Q26		Q27		Q28		Q29		Q30		Q31		Q32		Q33		Q34		Q35		Q36		Q37		Q38		Q39		Q40		Q41		Q42		Q43		Q44		Q45		Q46		Q47		Q48		Q49		Q50		Q51		Q52		Q53		Q54		Q55		Q56		Q57		Q58		Q59		Q60		Q61		Q62		Q63		Q64		Q65		Q66		Q67		Q68		Q69		Q70		Q71		Q72		Q73		Q74		Q75		Q76		Q77		Q78		Q79		Q80		Q81		Q82		Q83		Q84		Q85		Q86		Q87		Q88		Q89		Q90		Q91		Q92		Q93		Q94		Q95		Q96		Q97		Q98		Q99		Q100		Q101		Q102		Q103		Q104		Q105		Q106		Q107		Q108		Q109		Q110		Q111		Q112		Q113		Q114		Q115		Q116		Q117		Q118		Q119		Q120		Q121		Q122		Q123		Q124		Q125		Q126		Q127		Q128		Q129		Q130		Q131		Q132		Q133		Q134		Q135		Q136		Q137		Q138		Q139		Q140		Q141		Q142		Q143		Q144		Q145		Q146		Q147		Q148		Q149		Q150		Q151		Q152		Q153		Q154		Q155		Q156		Q157		Q158		Q159		Q160		Q161		Q162		Q163		Q164		Q165		Q166		Q167		Q168		Q169		Q170		Q171		Q172		Q173		Q174		Q175		Q176		Q177		Q178		Q179		Q180		Q181		Q182		Q183		Q184		Q185		Q186		Q187		Q188		Q189		Q190		Q191		Q192		Q193		Q194		Q195		Q196		Q197		Q198		Q199		Q200		Q201		Q202		Q203		Q204		Q205		Q206		Q207		Q208		Q209		Q210		Q211		Q212		Q213		Q214		Q215		Q216		Q217		Q218		Q219		Q220		Q221		Q222		Q223		Q224		Q225		Q226		Q227		Q228		Q229		Q230		Q231		Q232		Q233		Q234		Q235		Q236		Q237		Q238		Q239		Q240		Q241		Q242		Q243		Q244		Q245		Q246		Q247		Q248		Q249		Q250		Q251		Q252		Q253		Q254		Q255		Q256		Q257		Q258		Q259		Q260		Q261		Q262		Q263		Q264		Q265		Q266		Q267		Q268		Q269		Q270		Q271		Q272		Q273		Q274		Q275		Q276		Q277		Q278		Q279		Q280		Q281		Q282		Q283		Q284		Q285		Q286		Q287		Q288		Q289		Q290		Q291		Q292		Q293		Q294		Q295		Q296		Q297		Q298		Q299		Q300		Q301		Q302		Q303		Q304		Q305		Q306		Q307		Q308		Q309		Q310		Q311		Q312		Q313		Q314		Q315		Q316		Q317		Q318		Q319		Q320		Q321		Q322		Q323		Q324		Q325		Q326		Q327		Q328		Q329		Q330		Q331		Q332		Q333		Q334		Q335		Q336		Q337		Q338		Q339		Q340		Q341		Q342		Q343		Q344		Q345		Q346		Q347		Q348		Q349		Q350		Q351		Q352		Q353		Q354		Q355		Q356		Q357		Q358		Q359		Q360		Q361		Q362		Q363		Q364		Q365		Q366		Q367		Q368		Q369		Q370		Q371		Q372		Q373		Q374		Q375		Q376		Q377		Q378		Q379		Q380		Q381		Q382		Q383		Q384		Q385		Q386		Q387		Q388		Q389		Q390		Q391		Q392		Q393		Q394		Q395		Q396		Q397		Q398		Q399		Q400		Q401		Q402		Q403		Q404		Q405		Q406		Q407		Q408		Q409		Q410		Q411		Q412		Q413		Q414		Q415		Q416		Q417		Q418		Q419		Q420		Q421		Q422		Q423		Q424		Q425		Q426		Q427		Q428		Q429		Q430		Q431		Q432		Q433		Q434		Q435		Q436		Q437		Q438		Q439		Q440		Q441		Q442		Q443		Q444		Q445		Q446		Q447		Q448		Q449		Q450		Q451		Q452		Q453		Q454		Q455		Q456		Q457		Q458		Q459		Q460		Q461		Q462		Q463		Q464		Q465		Q466		Q467		Q468		Q469		Q470		Q471		Q472		Q473		Q474		Q475		Q476		Q477		Q478		Q479		Q480		Q481		Q482		Q483		Q484		Q485		Q486		Q487		Q488		Q489		Q490		Q491		Q492		Q493		Q494		Q495		Q496		Q497		Q498		Q499		Q500		Q501		Q502		Q503		Q504		Q505		Q506		Q507		Q508		Q509		Q510		Q511		Q512		Q513		Q514		Q515		Q516		Q517		Q518		Q519		Q520		Q521		Q522		Q523		Q524		Q525		Q526		Q527		Q528		Q529		Q530		Q531		Q532		Q533		Q534		Q535		Q536		Q537		Q538		Q539		Q540		Q541		Q542		Q543		Q544		Q545		Q546		Q547		Q548		Q549		Q550		Q551		Q552		Q553		Q554		Q555		Q556		Q557		Q558		Q559		Q560		Q561		Q562		Q563		Q564		Q565		Q566		Q567		Q568		Q569		Q570		Q571		Q572		Q573		Q574		Q575		Q576		Q577		Q578		Q579		Q580		Q581		Q582		Q583		Q584		Q585		Q586		Q587		Q588		Q589		Q590		Q591		Q592		Q593		Q594		Q595		Q596		Q597		Q598		Q599		Q600		Q601		Q602		Q603		Q604		Q605		Q606		Q607		Q608		Q609		Q610		Q611		Q612		Q613		Q614		Q615		Q616		Q617		Q618		Q619		Q620		Q621		Q622		Q623		Q624		Q625		Q626		Q627		Q628		Q629		Q630		Q631		Q632		Q633		Q634		Q635		Q636		Q637		Q638		Q639		Q640		Q641		Q642		Q643		Q644		Q645		Q646		Q647		Q648		Q649		Q650		Q651		Q652		Q653		Q654		Q655		Q656		Q657		Q658		Q659		Q660		Q661		Q662		Q663		Q664		Q665		Q666		Q667		Q668		Q669		Q670		Q671		Q672		Q673		Q674		Q675		Q676		Q677		Q678		Q679		Q680		Q681		Q682		Q683		Q684		Q685		Q686		Q687		Q688		Q689		Q690		Q691		Q692		Q693		Q694		Q695		Q696		Q697		Q698		Q699		Q700		Q701		Q702		Q703		Q704		Q705		Q706		Q707		Q708		Q709		Q710		Q711		Q712		Q713		Q714		Q715		Q716		Q717		Q718		Q719		Q720		Q721		Q722		Q723		Q724		Q725		Q726		Q727		Q728		Q729		Q730		Q731		Q732		Q733		Q734		Q735		Q736		Q737		Q738		Q739		Q740		Q741		Q742		Q743		Q744		Q745		Q746		Q747		Q748		Q749		Q750		Q751		Q752		Q753		Q754		Q755		Q756		Q757		Q758		Q759		Q760		Q761		Q762		Q763		Q764		Q765		Q766		Q767		Q768		Q769		Q770		Q771		Q772		Q773		Q774		Q775		Q776		Q777		Q778		Q779		Q780		Q781		Q782		Q783		Q784		Q785		Q786		Q787		Q788		Q789		Q790		Q791		Q792		Q793		Q794		Q795		Q796		Q797		Q798		Q799		Q800		Q801		Q802		Q803		Q804		Q805		Q806		Q807		Q808		Q809		Q810		Q811		Q812		Q813		Q814		Q815		Q816		Q817		Q818		Q819		Q820		Q821		Q822		Q823		Q824		Q825		Q826		Q827		Q828		Q829		Q830		Q831		Q832		Q833		Q834		Q835		Q836		Q837		Q838		Q839		Q840		Q841		Q842		Q843		Q844		Q845		Q846		Q847		Q848		Q849		Q850		Q851		Q852		Q853		Q854		Q855		Q856		Q857		Q858		Q859		Q860		Q861		Q862		Q863		Q864		Q865		Q866		Q867		Q868		Q869		Q870		Q871		Q872		Q873		Q874		Q875		Q876		Q877		Q878		Q879		Q880		Q881		Q882		Q883		Q884		Q885		Q886		Q887		Q888		Q889		Q890		Q891		Q892		Q893		Q894		Q895		Q896		Q897		Q898		Q899		Q900		Q901		Q902		Q903		Q904		Q905		Q906		Q907		Q908		Q909		Q910		Q911		Q912		Q913		Q914		Q915		Q916		Q917		Q918		Q919		Q920		Q921		Q922		Q923		Q924		Q925		Q926		Q927		Q928		Q929		Q930		Q931		Q932		Q933		Q934		Q935		Q936		Q937		Q938		Q939		Q940		Q941		Q942		Q943		Q944		Q945		Q946		Q947		Q948		Q949		Q950		Q951		Q952		Q953		Q954		Q955		Q956		Q957		Q958		Q959		Q960		Q961		Q962		Q963		Q964		Q965		Q966		Q967		Q968		Q969		Q970		Q971		Q972		Q973		Q974		Q975		Q976		Q977		Q978		Q979		Q980		Q981		Q982		Q983		Q984		Q985		Q986		Q987		Q988		Q989		Q990		Q991		Q992		Q993		Q994		Q995		Q996		Q997		Q998		Q999		Q1000		Q1001		Q1002		Q1003		Q1004		Q1005		Q1006		Q1007		Q1008		Q1009		Q1010		Q1011		Q1012		Q1013		Q1014		Q1015		Q1016		Q1017		Q1018		Q1019		Q1020		Q1021		Q1022		Q1023		Q1024		Q1025		Q1026		Q1027		Q1028		Q1029		Q1030		Q1031		Q1032		Q1033		Q1034	
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Table A-13
Helicopter Emission Factors
Barren Ridge Renewable Transmission Project

Helicopter Emission Calculations

Emission Factor Derivation

Approach/Climbout (i.e. Working)

Equiv. Engs	Engine HP	Number	Emissions lbs/hour							
			HC	CO	NOx	SOx	PM	CO2	CH4	N2O
T53-L-11D	1100	1	0.20	2.04	5.00	0.04	0.27			
T58-GE-5 (2)	1500	2	1.40	9.92	12.79	0.11	0.71			

Note: SOx increased to assume 30 ppm sulfur Jet A fuel Sulfur Content

Idle	Engine HP	Number	Emissions lbs/hour							
			HC	CO	NOx	SOx	PM	CO2	CH4	N2O
T53-L-11D	1100	1	9.00	4.21	0.20	0.01	0.01			
T58-GE-5 (2)	1500	2	25.86	45.12	0.40	0.02	0.03			

Source: FAED database

FAED - FAA Aircraft Engine Emission Database

Relating Factors to Potential Construction/Operating Helicopters

Approach/Climbout	Engine HP	Number	Emissions lbs/hour							
			HC	CO	NOx	SOx	PM	CO2	CH4	N2O
Hughes 500	420	1	0.08	0.78	1.91	0.02	0.10	812.2877	0.022724	0.026086
Light Lift	847	1	0.15	1.57	3.85	0.03	0.21	1638.114	0.045827	0.052607
Medium Lift	1400	2	2.61	18.52	23.87	0.20	1.32	5177.385	0.144841	0.166268
Heavy Lift	4500	2	8.40	59.52	76.74	0.64	4.25	16641.6	0.465559	0.534432

Idle	Engine HP	Number	Emissions lbs/hour							
			HC	CO	NOx	SOx	PM	CO2	CH4	N2O
Hughes 500	420	1	3.44	1.61	0.08	0.00	0.01	169.8592	0.004752	0.005455
Light Lift	847	1	6.93	3.24	0.15	0.01	0.01	342.5495	0.009583	0.011001
Medium Lift	1400	2	48.28	84.23	0.75	0.03	0.05	779.3914	0.021804	0.02503
Heavy Lift	4500	2	155.19	270.73	2.40	0.10	0.16	2505.186	0.070084	0.080452

Construction

Assumptions:

Idle time is 10% of working time for small helicopters and negligible for the Heavy Lift.

Assumes helicopters stay within 3000 feet of the ground.

Applicant Measure APM-G7 notes use of helicopters assisted construction in sensitive areas, but that

APM is not assumed to be implemented in this emission estimate.

Fuel Use							Emission Indices		
Assume density of fuel is 6.76 lbs/gallon							lbs/1000 lbs/ fuel		
	Working	Idle	Working	Idle			CO2	CH4	N2O
	kg/sec	kg/sec	gallons/hr	gallons/hr			3117	0.0872	0.1001
Hughes 500	0.03268364	0.006835	38.55018	8.061311					
Light Lift	0.065912	0.013783	77.74286	16.25698					
Medium Lift	0.20832	0.03136	245.7124	36.98896					
Heavy Lift	0.6696	0.1008	789.7897	118.8931					

Table A-14
Helicopter Operational Assumptions
Barren Ridge Renewable Transmission Project

Helicopter Emission Calculations

Helicopter Construction

Assumptions:

- 1) Hughes 500 size helicopters are used during conductor installation for the proposed project, and two Hughes helicopters are in operation during line stringing for 2.5 hours/day each.
- 2) Use of Light Lift, Medium Lift, and Heavy Lift helicopters for helicopter tower site construction and wreckout are based on estimates provided by Power Engineers
- 3) Idle time is 10% of working time for Hughes 500, Light Lift, and Medium Lift helicopters and negligible for the Heavy Lift.
- 4) Assumes helicopters stay within 3000 feet of the ground.
- 5) Assumes new construction is characterized by "Construction" activities below.
- 6) Assumes reconductoring includes the following: Conductor Removal, Conductor and OHGW Installation

Reconductoring	Light Lift		Medium Lift		Heavy Lift	
	Suspension	Dead-End	Suspension	Dead-End	Suspension	Dead-End
Site Preparation						
Personnel to Site	6	6	0	0	0	0
Brush Clearing	16	16	0	0	0	0
Temporary Heli Pad Construction	6	6	0.5	0.5	0	0
Soil Borings	0	0	0.5	0.5	0	0
Incidental	12	12	0	0	0	0
Conductor Removal						
Personnel to Site	4	4	0	0	0	0
Insulators & Hardware & Travelers	8	12	0	0	0	0
Unclip Conductor & OHGW	4	0	0	0	0	0
Break Tension/Sock Thru	0	4	0	0	0	0
Remove Jumper Loops & OHGW	0	4	0	0	0	0
Incidental	4	4	0	0	0	0
Excavate Foundation						
Personnel to Site	4	4	0	0	0	0
Tools & Equipment to Site	2	2	1	1	0	0
Equipment (Air Compressor)	1	1	2	2	0	0
Footing Steel Removal	0	0	4	4	0	0
Incidental	0	0	0	0	0	0
Suspension Tower Removal						
Personnel to Site	4	4	0	0	0	0
Tools & Equipment to Site	4	4	0	0	0	0
Tower Components	0	0	4	6	2	6
Incidental	4	4	0	0	0	0
Conductor & OHGW Installation						
Personnel to Site	4	12	0	0	0	0
Install Insulators, Hardware & Travelers	8	24	0	0	0	0
Clip-in or Dead-end Conductor	4	12	0	1	0	0
Space Conductor	6	0	0	0	0	0
Install Jumper Loops	0	6	0	0	0	0
Incidental	8	24	0	0	0	0
Total Number of Trips per Tower Site	109	165	12	15	2	6

Table A-14
Helicopter Operational Assumptions
Barren Ridge Renewable Transmission Project

New Construction	Hughes 500		Medium Lift		Heavy Lift	
	Suspension	Dead-End	Suspension	Dead-End	Suspension	Dead-End
Conductor & OHGW Installation						
Personnel to Site	4	12	0	0	0	0
Install Insulators, Hardware & Travelers	8	24	0	0	0	0
Clip-in or Dead-end Conductor	4	12	0	1	0	0
Space Conductor	6	0	0	0	0	0
Install Jumper Loops	0	6	0	0	0	0
Incidental	8	24	0	0	0	0
Total Number of Trips per Tower Site	30	78	0	1	0	0

New Construction - Mitigation	Light Lift		Medium Lift		Heavy Lift	
	Suspension	Dead-End	Suspension	Dead-End	Suspension	Dead-End
Foundations, Conventional Piers						
Personnel to Site	16	32	0	0	0	0
Tools to Site	6	12	0	0	0	0
Equipment (Air Compressor)	0	0	2	2	0	0
Spoil Removal	0	0	28	132	0	0
Rebar to Site	0	0	8	8	0	0
Stubs & Material to Site	8	8	0	0	0	0
Concrete to Site	0	0	28	120	0	0
Strip and Cleanup Site	8	8	0	0	0	0
Incidental	12	24	0	0	0	0
Tower Erection						
Personnel to Site	8	8	0	0	0	0
Tools to Site	4	4	0	0	0	0
Tower Components	0	0	2	2	16	24
Incidental	4	4	0	0	0	0
Conductor & OHGW Installation						
Personnel to Site	4	12	0	0	0	0
Install Insulators, Hardware & Travelers	8	24	0	0	0	0
Clip-in or Dead-end Conductor	4	12	0	1	0	0
Space Conductor	6	0	0	0	0	0
Install Jumper Loops	0	6	0	0	0	0
Incidental	8	24	0	0	0	0
Site Restoration						
Personnel to Site	2	2	0	0	0	0
Remove Temporary Heli Pad	6	6	0	0	0	0
Cleanup Site & Restoration	8	8	0	0	0	0
Total Number of Trips per Tower Site	112	194	68	265	16	24

Assumptions in time period

	Min	Hour
to helicopter pod	5	0.08
from helicopter pod	5	0.08
load/trip	10	0.17

Total Required Time for Each Helicopter Round Trip

Helicopter Type	Working Hour/Round Trip	Idle Hour/Round Trip
Hughes 500	2.50	0.250
Light Lift	0.33	0.033
Medium Lift	0.33	0.033
Heavy Lift	0.33	0.000

Table A-15
Maximum Daily Helicopter Emissions
Helicopter Migration
Barren Ridge Renewable Transmission Project

# tower/day	SCAQMD	AVAQMD	SCAQMD
Construction	Alternative 1	Alternative 2A	Alternative 2A
Light Lift	1	1	1
Medium Lift	1	1	1
Heavy Lift	1	1	1

# trip/day	SCAQMD	AVAQMD	SCAQMD
Construction	Alternative 1	Alternative 2A	Alternative 2A
Light Lift	112	112	112
Medium Lift	68	68	68
Heavy Lift	16	16	16

Alternative 1 - SCAQMD

	Light Lift Suspension	Dead-End	Medium Lift Suspension	Dead-End	Heavy Lift Suspension	Dead-End
230 kV Construction						
Total	112	194	68	265	16	24
Number of Tower Site	1	0	1	0	1	0
Total Number of Trips	112	0	68	0	16	0

Summary of Total Number of Helicopter Trips

	230 kV Construction
Light Lift	112
Medium Lift	68
Heavy Lift	16

	230 kV
Suspension	196
Dead-End	0

Assumptions in time period

	Min	Hour
to helicopter pod	5	0.08
from helicopter pod	5	0.08
load/trip	10	0.17

Total Required Time for Each Helicopter Round Trip

Helicopter Type	Working Hour/Round Trip	Idle Hour/Round Trip
Light Lift	0.33	0.033
Medium Lift	0.33	0.033
Heavy Lift	0.33	0.000

Total Time for Helicopter Operations (Hour)

Helicopter Type	230 kV Construction
	Total Working Hours
Light Lift	37.33
Medium Lift	22.67
Heavy Lift	5.33

Relating Factors to Potential Construction/Operating Helicopters

Approach/Climb-out	Engine HP	Number	Emissions lbs/hour	HC	CO	NOx	SOx	PM	CO2	CH4	N2O
Light Lift	847	1	0.15	1.57	3.85	0.03	0.21	1638.11	0.05	0.05	0.05
Medium Lift	1400	2	2.51	18.52	23.87	0.20	1.32	5177.39	0.14	0.17	0.17
Heavy Lift	4500	2	8.40	58.52	76.74	0.64	4.25	16641.60	0.47	0.53	0.53

Idle	Engine HP	Number	Emissions lbs/hour	HC	CO	NOx	SOx	PM	CO2	CH4	N2O
Light Lift	847	1	6.93	3.24	0.15	0.01	0.01	342.55	0.01	0.01	0.01
Medium Lift	1400	2	48.28	84.23	0.75	0.05	0.05	779.39	0.02	0.03	0.03
Heavy Lift	4500	2	155.19	270.73	2.40	0.10	0.10	2505.19	0.07	0.08	0.08

230 kV Construction - Total Emissions (lbs)

Helicopter Type	HC	CO	NOx	SOx	PM	CO2	CH4	N2O
Light Lift	31.55	70.68	144.32	1.20	7.85	62435.09	1.75	2.01
Medium Lift	168.65	610.65	542.85	4.57	30.09	119120.69	3.33	3.83
Heavy Lift	44.76	317.45	408.28	3.40	22.67	88755.18	2.48	2.83

Total Emissions (ton)

Helicopter Type	HC	CO	NOx	SOx	PM	CO2	CH4	N2O
Light Lift	0.02	0.04	0.07	0.00	0.00	31.22	0.00	0.00
Medium Lift	0.08	0.31	0.27	0.00	0.02	59.56	0.02	0.03
Heavy Lift	0.02	0.16	0.20	0.00	0.01	44.38	0.00	0.00

Total Emissions (ton)

HC	CO	NOx	SOx	PM	CO2	CH4	N2O
0.12	0.50	0.55	0.00	0.03	135.16	0.00	0.00

Alternative 2A

	Light Lift Suspension	Dead-End	Medium Lift Suspension	Dead-End	Heavy Lift Suspension	Dead-End
230 kV Construction						
Total	112	194	68	265	16	24
Number of Tower Site	1	0	1	0	1	0
Total Number of Trips	112	0	68	0	16	0

Summary of Total Number of Helicopter Trips

	230 kV Construction
Light Lift	112
Medium Lift	68
Heavy Lift	16

	230 kV
Suspension	196
Dead-End	0

Assumptions in time period

	Min	Hour
to helicopter pod	5	0.08
from helicopter pod	5	0.08
load/trip	10	0.17

Total Required Time for Each Helicopter Round Trip

Helicopter Type	Working Hour/Round Trip	Idle Hour/Round Trip
Light Lift	0.33	0.033
Medium Lift	0.33	0.033
Heavy Lift	0.33	0.000

Total Time for Helicopter Operations (Hour)

Helicopter Type	230 kV Construction
	Total Working Hours
Light Lift	37.33
Medium Lift	22.67
Heavy Lift	5.33

Relating Factors to Potential Construction/Operating Helicopters

Approach/Climb-out	Engine HP	Number	Emissions lbs/hour	HC	CO	NOx	SOx	PM	CO2	CH4	N2O
Light Lift	847	1	0.15	1.57	3.85	0.03	0.21	1638.11	0.05	0.05	0.05
Medium Lift	1400	2	2.51	18.52	23.87	0.20	1.32	5177.39	0.14	0.17	0.17
Heavy Lift	4500	2	8.40	58.52	76.74	0.64	4.25	16641.60	0.47	0.53	0.53

Idle	Engine HP	Number	Emissions lbs/hour	HC	CO	NOx	SOx	PM	CO2	CH4	N2O
Light Lift	847	1	6.93	3.24	0.15	0.01	0.01	342.55	0.01	0.01	0.01
Medium Lift	1400	2	48.28	84.23	0.75	0.05	0.05	779.39	0.02	0.03	0.03
Heavy Lift	4500	2	155.19	270.73	2.40	0.10	0.10	2505.19	0.07	0.08	0.08

230 kV Construction - Total Emissions (lbs)

Helicopter Type	HC	CO	NOx	SOx	PM	CO2	CH4	N2O
Light Lift	31.55	70.68	144.32	1.20	7.85	62435.09	1.75	2.01
Medium Lift	168.65	610.65	542.85	4.57	30.09	119120.69	3.33	3.83
Heavy Lift	44.76	317.45	408.28	3.40	22.67	88755.18	2.48	2.83

Total Emissions (ton)

Helicopter Type	HC	CO	NOx	SOx	PM	CO2	CH4	N2O
Light Lift	0.02	0.04	0.07	0.00	0.00	31.22	0.00	0.00
Medium Lift	0.08	0.31	0.27	0.00	0.02	59.56	0.02	0.03
Heavy Lift	0.02	0.16	0.20	0.00	0.01	44.38	0.00	0.00

Total Emissions (ton)

HC	CO	NOx	SOx	PM	CO2	CH4	N2O
0.12	0.50	0.55	0.00	0.03	135.16	0.00	0.00

Alternative 1 (SCAQMD)

230kV Construction		Light Lift		Medium Lift		Heavy Lift	
		Suspension	Dead-End	Suspension	Dead-End	Suspension	Dead-End
Foundations, Conventional Piers							
Personnel to Site	16	0	0	0	0	0	0
Tools to Site	6	12	0	0	0	0	0
Equipment (Air Compressor)	0	0	2	0	0	0	0
Spill Removal	0	0	28	132	0	0	0
Rebar to Site	0	0	8	0	0	0	0
Stubs & Material to Site	8	8	0	0	0	0	0
Concrete to Site	0	0	28	120	0	0	0
Strip and Cleanup Site	8	8	0	0	0	0	0
Incidental	12	0	0	0	0	0	0
Tower Erection							
Personnel to Site	8	0	0	0	0	0	0
Tools to Site	4	0	0	0	0	0	0
Tower Components	0	0	2	16	24	0	0
Incidental	4	0	0	0	0	0	0
Conductor & OHGW Installation							
Personnel to Site	4	0	0	0	0	0	0
Install Insulators, Hardware & Travelers	8	0	0	0	0	0	0
Clip-in or Dead-end Conductor	4	0	1	0	0	0	0
Space Conductor	6	0	0	0	0	0	0
Install Jumper Loops	0	0	0	0	0	0	0
Incidental	8	0	0	0	0	0	0
Site Restoration							
Personnel to Site	2	0	0	0	0	0	0
Remove Temporary Heli Pad	6	0	0	0	0	0	0
Cleanup Site & Restoration	8	0	0	0	0	0	0
Total	112	68	265	16	24	0	0
Number of Tower Site	48	2	2	48	2	48	2
Total Number of Trips	5376	3264	530	768	48	48	48

	Light Lift		Medium Lift		Heavy Lift	
	Suspension	Dead-End	Suspension	Dead-End	Suspension	Dead-End
230 kV Construction	112	194	68	265	16	24
Total	48	2	48	2	48	2
Number of Tower Site	5376	388	3264	530	768	48
Total Number of Trips						

Summary of Total Number of Helicopter Trips for Entire Tower Sites

	230 kV Construction	
	Light Lift	Heavy Lift
Hughes 500	5764	819
Light Lift	3764	
Medium Lift		
Heavy Lift		

Assumptions in time period	Min	Hour
to helicopter pod	5	0.08
from helicopter pod	5	0.08
load/trip	10	0.17

Total Required Time for Each Helicopter Round Trip

Helicopter Type	Working Hour/Round Trip	Idle Hour/Round Trip
Hughes 500	0.33	0.033
Light Lift	0.33	0.033
Medium Lift	0.33	0.033
Heavy Lift	0.33	0.033

Total Time for Helicopter Operations (Hour)

Helicopter Type	230 kV Construction Total Working Hours	Total Idle Hours
Hughes 500	1824.33	182.43
Light Lift	1824.67	182.47
Medium Lift		
Heavy Lift	272.00	0.00

	230 kV
	Suspension
	Dead-End

Table A-16
Annual Helicopter Emissions
Helicopter Mitigation
Barren Ridge Renewable Transmission Project

Relating Factors to Potential Construction/Operating Helicopters - (Copy&Pasted from helicopter emissions tab)

Approach/Climbout	Engine HP	Number	Emissions lbs/hour							
			HC	CO	NOx	SOx	PM	CH ₄	CO ₂	N ₂ O
Hughes 500	420	1	0.08	0.78	0.02	0.00	0.10	0.02	812.29	0.03
Light Lift	847	1	1.57	1.57	3.85	0.03	0.21	0.05	1638.11	0.05
Medium Lift	1400	2	2.61	16.92	23.87	0.20	1.32	0.14	5177.39	0.17
Heavy Lift	4500	2	8.40	59.52	76.74	0.64	4.25	0.47	16841.60	0.63

Idle	Engine HP	Number	Emissions lbs/hour							
			HC	CO	NOx	SOx	PM	CH ₄	CO ₂	N ₂ O
Hughes 500	420	1	3.44	1.61	0.08	0.00	0.01	0.00	169.86	0.01
Light Lift	847	1	6.93	3.24	0.15	0.01	0.01	0.01	342.65	0.01
Medium Lift	1400	2	48.28	64.23	0.75	0.03	0.05	0.02	778.39	0.03
Heavy Lift	4500	2	155.19	270.73	2.40	0.10	0.16	0.07	2505.19	0.08

230kV Construction - Total Emissions (lbs)

Helicopter Type	HC	CO	NOx	SOx	PM	CH ₄	N ₂ O
Hughes 500	1623.58	3637.40	7427.12	61.58	404.14	89.89	2.11
Light Lift	9409.60	34070.53	30287.92	294.73	1879.08	185.93	3.17
Medium Lift	2283.92	16188.80	20873.27	173.49	1156.41	126.63	0.90
Heavy Lift							

Total Emissions (lbs)

Helicopter Type	HC	CO	NOx	SOx	PM	CH ₄	N ₂ O
Hughes 500	1623.58	3637.40	7427.12	61.58	404.14	89.89	2.11
Light Lift	9409.60	34070.53	30287.92	294.73	1879.08	185.93	3.17
Medium Lift	2283.92	16188.80	20873.27	173.49	1156.41	126.63	0.90
Heavy Lift							

Total Emissions (ton)

Helicopter Type	HC	CO	NOx	SOx	PM	CH ₄	N ₂ O
Hughes 500	0.81	1.82	3.71	0.03	0.20	0.04	0.05
Light Lift	17.04	151.4	15.14	0.13	0.84	0.09	0.11
Medium Lift	1.14	8.09	10.44	0.09	0.58	0.06	0.07
Heavy Lift							

Total Emissions (ton)

HC	CO	NOx	SOx	PM	CH ₄	N ₂ O
6.68	26.95	29.29	0.24	1.82	0.20	0.23

Alternative 2A - AVAQMD

230kV Construction	Light Lift		Medium Lift		Heavy Lift	
	Suspension	Dead-End	Suspension	Dead-End	Suspension	Dead-End
Foundations, Conventional Piers						
Personnel to Site	16	32	0	0	0	0
Tools to Site	6	12	0	0	0	0
Equipment (Air Compressor)	0	0	2	132	0	0
Spoil Removal	0	0	28	6	0	0
Rebar to Site	0	0	8	0	0	0
Subs & Material to Site	8	8	0	0	0	0
Concrete to Site	0	0	28	120	0	0
Strip and Cleanup Site	8	8	0	0	0	0
Incidental	12	24	0	0	0	0
Tower Erection						
Personnel to Site	8	8	0	0	0	0
Tools to Site	4	4	0	0	0	0
Tower Components	0	0	2	2	16	24
Incidental	4	4	0	0	0	0
Conductor & OHGW Installation						
Personnel to Site	4	12	0	0	0	0
Install Insulators, Hardware & Travelers	8	24	0	0	0	0
Clip-in or Dead-end Conductor	4	12	0	1	0	0
Space Conductor	6	0	0	0	0	0
Install Jumper Loops	0	6	0	0	0	0
Incidental	8	24	0	0	0	0
Site Restoration						
Personnel to Site	2	2	0	0	0	0
Remove Temporary Helipad	6	6	0	0	0	0
Cleanup Site & Restoration	8	8	0	0	0	0
Total	112	194	68	285	16	24
Number of Tower Site	7	7	0	0	2	0
Total Number of Trips	784	0	476	0	112	0

	Light Lift		Medium Lift		Heavy Lift	
	Suspension	Dead-End	Suspension	Dead-End	Suspension	Dead-End
230 kV Construction						
Total	112	194	68	265	18	24
Number of Tower Site	22	2	22	2	22	2
Total Number of Trips	2464	388	1486	530	352	49

Summary of Total Number of Helicopter Trips for Entire Tower Sites

	230 kV Construction	
	Light Lift	Heavy Lift
Hughes 500		
Light Lift	784	
Medium Lift	476	
Heavy Lift	112	

	Hour	
	Min	Max
Assumptions in time period		
to helicopter pod	5	0.08
from helicopter pod	5	0.08
load/rip	10	0.17

Total Required Time for Each Helicopter Round Trip

	Working Hour/Round Trip		Idle Hour/Round Trip	
	Light Lift	Medium Lift	Light Lift	Medium Lift
Hughes 500				
Light Lift	0.33	0.033		
Medium Lift	0.33	0.033		
Heavy Lift	0.33	0.000		

Total Time for Helicopter Operations (Hour)

Helicopter Type	230 kV Construction	
	Total Working Hours	Total Idle Hours
Hughes 500		
Light Lift	261.33	25.13
Medium Lift	156.67	15.87
Heavy Lift	37.33	0.00

Relating Factors to Potential Construction/Operating Helicopters

Approach/Climbout	Engine HP	Number	Emissions lb/hour					
			HC	CO	NOx	SOx	PM	CO2
Hughes 500	420	1	0.08	0.78	1.91	0.02	0.10	812.20
Light Lift	847	1	0.15	1.57	3.85	0.03	0.21	932.81
Medium Lift	1400	2	2.61	19.52	23.87	0.20	0.32	577.39
Heavy Lift	4500	2	8.40	59.52	76.74	0.84	1.25	1664.60

Idle	Engine HP	Number	Emissions lb/hour					
			HC	CO	NOx	SOx	PM	CO2
Hughes 500	420	1	3.44	1.61	0.06	0.00	0.01	160.86
Light Lift	847	1	6.93	3.24	0.15	0.01	0.01	342.55
Medium Lift	1400	2	48.28	84.23	0.75	0.03	0.05	776.39
Heavy Lift	4500	2	155.19	270.73	2.40	0.10	0.16	2506.19

230kV Construction - Total Emissions (lbs)

Helicopter Type	HC	CO	NOx	SOx	PM	CO2	CH4	N2O
Hughes 500								
Light Lift	220.83	484.75	1010.21	8.38	54.07	437045.65	12.23	14.04
Medium Lift	1180.54	4274.53	3786.96	31.86	216.66	833844.83	23.33	26.78
Heavy Lift	313.48	2222.13	2864.96	23.61	158.72	627266.25	17.38	19.95

Total Emissions (lbs)

Helicopter Type	HC	CO	NOx	SOx	PM	CO2	CH4	N2O
Hughes 500								
Light Lift	220.83	484.75	1010.21	8.38	54.07	437045.65	12.23	14.04
Medium Lift	1180.54	4274.53	3786.96	31.86	216.66	833844.83	23.33	26.78
Heavy Lift	313.48	2222.13	2864.96	23.61	158.72	627266.25	17.38	19.95

Total Emissions (ton)

Helicopter Type	HC	CO	NOx	SOx	PM	CO2	CH4	N2O
Hughes 500								
Light Lift	0.11	0.25	0.51	0.00	0.03	218.52	0.01	0.01
Medium Lift	0.59	1.90	1.80	0.02	0.11	416.92	0.01	0.01
Heavy Lift	0.16	1.11	1.43	0.01	0.08	310.64	0.01	0.01

Total Emissions (ton)

Helicopter Type	HC	CO	NOx	SOx	PM	CO2	CH4	N2O
Hughes 500								
Light Lift	0.86	3.50	3.64	0.03	0.21	946.09	0.03	0.03

Alternative 2A - SCAQMD

230kV Construction				Light Lift				Medium Lift				Heavy Lift			
		Suspension	Dead-End			Suspension	Dead-End			Suspension	Dead-End			Suspension	Dead-End
Foundations, Conventional Piers															
Personnel to Site		16	32			0	0			0	0			0	0
Tools to Site		6	12			0	0			0	0			0	0
Equipment (Air Compressor)		0	0			2	2			0	0			0	0
Spill Removal		0	0			28	132			0	0			0	0
Rebar to Site		8	8			8	8			0	0			0	0
Stubs & Material to Site		0	0			28	120			0	0			0	0
Concrete to Site		8	8			0	0			0	0			0	0
Strip and Cleanup Site		12	24			0	0			0	0			0	0
Incidental															
Tower Erection															
Personnel to Site		8	8			0	0			0	0			0	0
Tools to Site		4	4			0	0			0	0			0	0
Tower Components		0	0			2	2			16	24			0	0
Incidental		4	4			0	0			0	0			0	0
Conductor & OHGW Installation															
Personnel to Site		4	12			0	0			0	0			0	0
Install Insulators, Hardware & Travelers		8	24			0	0			0	0			0	0
Clip-in or Dead-end Conductor		4	12			0	0			0	0			0	0
Space Conductor		6	6			0	0			0	0			0	0
Install Jumper Loops		8	24			0	0			0	0			0	0
Incidental															
Site Restoration															
Personnel to Site		2	2			0	0			0	0			0	0
Remove Temporary Hel Pad		6	6			0	0			0	0			0	0
Cleanup Site & Restoration		8	8			0	0			0	0			0	0
Total		112	184			68	265			22	2			16	24
Number of Tower Site		15	15			15	15			15	15			15	15
Total Number of Trips		1680	0			1020	0			240	0			240	0

230 kV Construction				Light Lift				Medium Lift				Heavy Lift			
		Suspension	Dead-End			Suspension	Dead-End			Suspension	Dead-End			Suspension	Dead-End
Total		112	184			68	265			22	2			16	24
Number of Tower Site		22	2			22	2			22	2			22	2
Total Number of Trips		2464	388			1496	530			352	48			352	48

Summary of Total Number of Helicopter Trips for Entire Tower Sites

230 kV Construction			
Hughes 500			
Light Lift		1680	
Medium Lift		1020	
Heavy Lift		240	

Assumptions in time period			
to helicopter pod	Min	Hour	
from helicopter pod	5	0.08	
loading	10	0.17	

Total Required Time for Each Helicopter Round Trip

Helicopter Type			
	Working Hour/Round Trip	Idle Hour/Round Trip	
Hughes 500			
Light Lift	0.33	0.033	
Medium Lift	0.33	0.033	
Heavy Lift	0.33	0.000	

Total Time for Helicopter Operations (Hour)

Helicopter Type			
	230 kV Construction		
Hughes 500			
Light Lift	560.00	56.00	
Medium Lift	340.00	34.00	
Heavy Lift	80.00	0.00	

230 kV			
		Suspension	Dead End
		4312	966

Rating Factors to Potential Construction/Operating Helicopters

Approach/Climb/Out	Engine HP	Number	Emissions lb/hour						
			HC	CO	NOx	SOx	PM	CO ₂	N ₂ O
Hughes 500	420	1	0.08	0.78	1.81	0.02	0.10	812.28	0.02
Light Lift	847	1	0.15	1.57	3.65	0.03	0.21	1638.11	0.05
Medium Lift	1400	2	2.61	18.52	23.67	0.20	1.32	5777.39	0.17
Heavy Lift	4500	2	8.40	59.52	76.74	0.64	4.25	16641.60	0.53

Idle	Engine HP	Number	Emissions lb/hour						
			HC	CO	NOx	SOx	PM	CO ₂	N ₂ O
Hughes 500	420	1	3.44	1.61	0.08	0.00	0.01	169.66	0.00
Light Lift	847	1	6.93	3.24	0.15	0.01	0.01	342.55	0.01
Medium Lift	1400	2	48.28	84.23	0.75	0.03	0.05	770.39	0.02
Heavy Lift	4500	2	155.19	270.73	2.40	0.10	0.16	2505.19	0.07

230kV Construction - Total Emissions (lbs)

Helicopter Type	HC	CO	NOx	SOx	PM	CO ₂	N ₂ O
Hughes 500	473.22	1060.17	2164.74	17.95	117.79	936526.39	30.08
Light Lift	2529.73	9159.71	8142.77	66.46	451.41	1788870.35	57.38
Medium Lift	671.74	4761.70	6199.20	51.03	340.12	1331327.68	42.75
Heavy Lift							

Total Emissions (lbs)

Helicopter Type	HC	CO	NOx	SOx	PM	CO ₂	N ₂ O
Hughes 500	473.22	1060.17	2164.74	17.95	117.79	936526.39	30.08
Light Lift	1.26	4.58	4.07	0.03	0.23	883.41	0.03
Medium Lift	0.34	2.36	3.07	0.03	0.17	665.66	0.02
Heavy Lift							

Total Emissions (ton)

Helicopter Type	HC	CO	NOx	SOx	PM	CO ₂	N ₂ O
Hughes 500	0.24	0.53	1.08	0.01	0.06	468.26	0.01
Light Lift	1.26	4.58	4.07	0.03	0.23	883.41	0.03
Medium Lift	0.34	2.36	3.07	0.03	0.17	665.66	0.02
Heavy Lift							

Total Emissions (ton)

Helicopter Type	HC	CO	NOx	SOx	PM	CO ₂	N ₂ O
Hughes 500	1.84	7.49	8.22	0.07	0.45	2027.33	0.06
Light Lift							
Medium Lift							
Heavy Lift							

Segment H - AVAQMD

230kV Construction	Light Lift		Medium Lift		Heavy Lift	
	Suspension	Dead-End	Suspension	Dead-End	Suspension	Dead-End
Foundations, Conventional Piers						
Personnel to Site	16	32	0	0	0	0
Tools to Site	6	12	0	0	0	0
Equipment (Air Compressor)	0	0	2	2	0	0
Spoil Removal	0	0	28	132	0	0
Rebar to Site	0	0	8	8	0	0
Slabs & Material to Site	8	8	0	0	0	0
Concrete to Site	0	0	28	120	0	0
Strip and Cleanup Site	8	8	0	0	0	0
Incidental	12	24	0	0	0	0
Tower Erection						
Personnel to Site	8	8	0	0	0	0
Tools to Site	4	4	0	0	0	0
Tower Components	0	0	2	2	16	24
Incidental	4	4	0	0	0	0
Conductor & OHGW Installation						
Personnel to Site	4	12	0	0	0	0
Install Insulators, Hardware & Travelers	8	24	0	0	0	0
Clip-in or Dead-end Conductor	4	12	0	1	0	0
Space Conductor	6	0	0	0	0	0
Install Jumper Loops	0	6	0	0	0	0
Incidental	8	24	0	0	0	0
Site Restoration						
Personnel to Site	2	2	0	0	0	0
Remove Temporary Heli Pad	6	6	0	0	0	0
Cleanup Site & Restoration	8	8	0	0	0	0
Total	112	194	68	265	16	24
Number of Tower Site	2	2	26	26	2	2
Total Number of Trips	2012	388	1768	530	416	48

Table A-16
Annual Helicopter Emissions
Helicopter Mitigation
Barren Ridge Renewable Transmission Project

	Light Lift		Medium Lift		Heavy Lift	
	Suspension	Dead-End	Suspension	Dead-End	Suspension	Dead-End
230 kV Construction						
Total	112	194	68	265	16	24
Number of Tower Site	22	2				2
Total Number of Trips	2464	388	1496	530	352	48

Summary of Total Number of Helicopter Trips for Entire Tower Sites

230 kV Construction	
Hughes 500	
Light Lift	3300
Medium Lift	2298
Heavy Lift	464

Assumptions in time period	
to helicopter pod	Min
from helicopter pod	5
load/trip	0.08
	0.17

Total Required Time for Each Helicopter Round Trip

Helicopter Type	Working Hour/Round Trip	Idle Hour/Round Trip
Hughes 500		
Light Lift	0.33	0.033
Medium Lift	0.33	0.033
Heavy Lift	0.33	0.000

Total Time for Helicopter Operations (Hour)

Helicopter Type	230 kV Construction	
	Total Working Hours	Total Idle Hours
Hughes 500		
Light Lift	1100.00	110.00
Medium Lift	766.00	76.60
Heavy Lift	154.67	0.00

Relating Factors to Potential Construction/Operating Helicopters

Approach/Climbout	Engine HP	Number	Emissions lb/hour						
			HC	CO	NOx	SOx	PM	CO2	N2O
Hughes 500	420	1	0.08	0.78	1.91	0.02	0.10	812.29	0.03
Light Lift	847	1	0.15	1.57	3.85	0.03	0.21	1638.11	0.05
Medium Lift	1400	2	2.61	18.52	23.87	0.20	1.32	5177.39	0.14
Heavy Lift	4500	2	8.40	59.52	76.74	0.64	4.25	16641.60	0.53

Idle	Engine HP	Number	Emissions lb/hour						
			HC	CO	NOx	SOx	PM	CO2	N2O
Hughes 500	420	1	3.44	1.61	0.08	0.00	0.01	169.89	0.01
Light Lift	847	1	6.63	3.24	0.15	0.01	0.01	342.55	0.01
Medium Lift	1400	2	48.28	84.23	0.75	0.03	0.05	779.39	0.02
Heavy Lift	4500	2	155.19	270.73	2.40	0.10	0.16	2505.19	0.08

230kV Construction - Total Emissions (lbs)

Helicopter Type	HC	CO	NOx	SOx	PM	CO2	N2O
Hughes 500							
Light Lift	929.53	2082.48	4252.17	35.25	231.38	1839605.41	59.08
Medium Lift	5699.33	18345.19	15429	154.29	1017.00	4025578.60	129.28
Heavy Lift	1288.70	9205.66	11869.12	98.65	657.57	2573900.17	82.66

Total Emissions (lbs)

Helicopter Type	HC	CO	NOx	SOx	PM	CO2	N2O
Hughes 500							
Light Lift	929.53	2082.48	4252.17	35.25	231.38	1839605.41	59.08
Medium Lift	5699.33	18345.19	15429	154.29	1017.00	4025578.60	129.28
Heavy Lift	1288.70	9205.66	11869.12	98.65	657.57	2573900.17	82.66

Total Emissions (ton)

Helicopter Type	HC	CO	NOx	SOx	PM	CO2	N2O
Hughes 500							
Light Lift	0.46	1.04	2.13	0.02	0.12	619.80	0.03
Medium Lift	2.85	10.32	9.17	0.08	0.51	2012.79	0.06
Heavy Lift	0.65	4.60	5.93	0.05	0.33	1286.95	0.04

Total Emissions (ton)

Helicopter Type	HC	CO	NOx	SOx	PM	CO2	N2O
Hughes 500							
Light Lift	3.96	15.96	17.23	0.14	0.85	4219.54	0.14
Medium Lift							
Heavy Lift							

Segment H - SCAQMD

230kV Construction				Light Lift		Medium Lift		Heavy Lift	
	Suspension	Dead-End		Suspension	Dead-End	Suspension	Dead-End	Suspension	Dead-End
Foundations, Conventional Piers									
Personnel to Site	16	32		0	0	0	0	0	0
Tools to Site	6	12		0	0	0	0	0	0
Equipment (Air Compressor)	0	0		2	2	0	0	0	0
Spoil Removal	0	0		28	132	0	0	0	0
Rebar to Site	0	0		8	8	0	0	0	0
Slabs & Material to Site	8	8		0	0	0	0	0	0
Concrete to Site	0	0		28	120	0	0	0	0
Strip and Cleanup Site	8	8		0	0	0	0	0	0
Incidental	12	24		0	0	0	0	0	0
Tower Erection									
Personnel to Site	8	8		0	0	0	0	0	0
Tools to Site	4	4		0	0	0	0	0	0
Tower Components	0	0		2	2	16	24	0	0
Incidental	4	4		0	0	0	0	0	0
Conductor & OHGW Installation									
Personnel to Site	4	12		0	0	0	0	0	0
Install Insulators, Hardware & Travelers	8	24		0	0	0	0	0	0
Cut-in or Dead-end Conductor	4	12		0	1	0	0	0	0
Space Conductor	6	0		0	0	0	0	0	0
Install Jumper Loops	0	6		0	0	0	0	0	0
Incidental	8	24		0	0	0	0	0	0
Site Restoration									
Personnel to Site	2	2		0	0	0	0	0	0
Remove Temporary Helipad	6	6		0	0	0	0	0	0
Cleanup Site & Restoration	8	8		0	0	0	0	0	0
Total	112	194		68	265	16	24	0	0
Number of Tower Site	73	2		73	2	73	2	0	0
Total Number of Trips	8176	388		4954	530	1168	48		

230 kV Construction				Light Lift		Medium Lift		Heavy Lift	
	Suspension	Dead-End		Suspension	Dead-End	Suspension	Dead-End	Suspension	Dead-End
Total	112	194		68	265	16	24		
Number of Tower Site	22	2		22	2	22	2		
Total Number of Trips	2464	388		1486	530	352	48		

Summary of Total Number of Helicopter Trips for Entire Tower Sites

		230 kV Construction
Hughes 500		
Light Lift		8564
Medium Lift		5494
Heavy Lift		1216
Assumptions in time period	Min	Hour
to helicopter pod	5	0.08
from helicopter pod	5	0.08
load trip	10	0.17

Total Required Time for Each Helicopter Round Trip

		Working Hour/Round Trip	Idle Hour/Round Trip
Helicopter Type			
Hughes 500			
Light Lift	0.33	0.033	
Medium Lift	0.33	0.033	
Heavy Lift	0.33	0.033	

	230 kV	
	Suspension	4312
	Dead End	966

Table A-16
Annual Helicopter Emissions
Helicopter Mitigation
Barren Ridge Renewable Transmission Project

Total Time for Helicopter Operations (Hour)

Helicopter Type	230 kV Construction	
	Total Working Hours	Total Idle Hours
Hughes 500		
Light Lift	2854.67	285.47
Medium Lift	1831.33	183.13
Heavy Lift	405.33	0.00

Relating Factors to Potential Construction/Operating Helicopters

Approach/Climbout	Engine HP	Number	Emissions lbs/hour						
			HC	CO	NOx	SOx	PM	CO ₂	N ₂ O
Hughes 500	420	1	0.08	0.78	1.91	0.02	0.10	812.28	0.03
Light Lift	847	1	0.15	1.57	3.85	0.03	0.21	1638.11	0.05
Medium Lift	1400	2	2.61	18.52	23.87	0.20	1.32	5177.39	0.17
Heavy Lift	4500	2	8.40	59.52	76.74	0.64	4.25	18641.60	0.53

Idle	Engine HP	Number	Emissions lbs/hour						
			HC	CO	NOx	SOx	PM	CO ₂	N ₂ O
Hughes 500	420	1	3.44	1.61	0.08	0.00	0.01	169.88	0.00
Light Lift	847	1	6.93	3.24	0.15	0.01	0.01	342.55	0.01
Medium Lift	1400	2	48.28	84.23	0.75	0.03	0.05	779.39	0.03
Heavy Lift	4500	2	155.19	270.73	2.40	0.10	0.16	2505.18	0.08

230kV Construction - Total Emissions (lbs)

Helicopter Type	HC	CO	NOx	SOx	PM	CO ₂	CH ₄	N ₂ O
Hughes 500								
Light Lift	2412.27	5404.36	11035.02	91.48	600.46	4774054.77	133.56	153.32
Medium Lift	13625.81	49336.72	43859.20	388.88	2431.41	9624251.02	269.24	309.08
Heavy Lift	3403.48	24125.97	31105.27	258.54	1723.28	6745393.56	188.71	216.62

Total Emissions (lbs)

Helicopter Type	HC	CO	NOx	SOx	PM	CO ₂	CH ₄	N ₂ O
Hughes 500								
Light Lift	2412.27	5404.36	11035.02	91.48	600.46	4774054.77	133.56	153.32
Medium Lift	13625.81	49336.72	43859.20	388.88	2431.41	9624251.02	269.24	309.08
Heavy Lift	3403.48	24125.97	31105.27	258.54	1723.28	6745393.56	188.71	216.62

Total Emissions (ton)

Helicopter Type	HC	CO	NOx	SOx	PM	CO ₂	CH ₄	N ₂ O
Hughes 500								
Light Lift	1.21	2.70	5.52	0.05	0.30	2387.03	0.07	0.08
Medium Lift	6.81	24.67	21.83	0.18	1.22	4812.13	0.13	0.15
Heavy Lift	1.70	12.06	15.55	0.13	0.86	3372.70	0.09	0.11

Total Emissions (ton)

HC	CO	NOx	SOx	PM	CO ₂	CH ₄	N ₂ O
972	3943	43.00	0.36	2.38	10571.85	0.30	0.34

tower/day

	KAQMD	KAQMD	KAQMD	KAQMD	KAQMD	KAQMD	KAQMD
Construction	Segment A	Segment B	Segment B	Segment B	Segment G	Segment G	Segment G
Light Lift	1	1	1	1	1	1	1
Medium Lift	1	1	1	1	1	1	1
Heavy Lift	1	1	1	1	1	1	1

trip/day

	KAQMD	KAQMD	KAQMD	KAQMD	KAQMD	KAQMD	KAQMD
Construction	Segment A	Segment B	Segment B	Segment B	Segment G	Segment G	Segment G
Light Lift	109	109	109	109	0	0	0
Medium Lift	12	12	12	12	0	0	0
Heavy Lift	2	2	2	2	0	0	0

Segment A - KCAQMD

	Light Lift	Medium Lift	Heavy Lift	Dead-End	Suspension	Dead-End
230 kV Construction						
Total	109	12	2	15	2	6
Number of Tower Site	1	1	1	0	1	0
Total Number of Trips	109	12	2	0	2	0

Summary of Total Number of Helicopter Trips

	230 kV Construction
Light Lift	109
Medium Lift	12
Heavy Lift	2

Assumptions in time period

	Min	Hour
to helicopter pod	5	0.08
from helicopter pod	5	0.08
load/trip	10	0.17

Total Required Time for Each Helicopter Round Trip

Helicopter Type	Working Hour/Round Trip	Idle Hour/Round Trip
Light Lift	0.33	0.33
Medium Lift	0.33	0.33
Heavy Lift	0.33	0.000

Total Time for Helicopter Operations (Hour)

Helicopter Type	230 kV Construction	Total Idle Hours
Light Lift	36.33	3.63
Medium Lift	4.00	0.40
Heavy Lift	0.67	0.00

Relating Factors to Potential Construction/Operating Helicopters

Approach/Climbout	Engine HP	Number	Emissions lbs/hour	CO	NOx	SOx	PM
Light Lift	847	1	0.15	1.57	3.85	0.03	0.21
Medium Lift	1400	2	2.61	18.52	23.87	0.20	1.32
Heavy Lift	4500	2	8.40	59.52	76.74	0.64	4.25

Idle	Engine HP	Number	Emissions lbs/hour	CO	NOx	SOx	PM
Light Lift	847	1	6.93	3.24	0.15	0.01	0.01
Medium Lift	1400	2	48.28	84.23	0.75	0.03	0.05
Heavy Lift	4500	2	135.19	270.73	2.40	0.10	0.16

230 kV Construction - Total Emissions (lbs)

Helicopter Type	HC	CO	NOx	SOx	PM
Light Lift	30.70	68.79	140.45	1.16	7.64
Medium Lift	29.76	107.76	95.80	0.81	5.31
Heavy Lift	5.60	39.68	51.16	0.43	2.83

Table A-17
Maximum Daily Helicopter Emissions
Reconducting
Barren Ridge Renewable Transmission Project

Total Emissions (ton)						
Helicopter Type	HC	CO	NOx	SOx	PM	
Light Lift	0.02	0.03	0.07	0.00	0.00	
Medium Lift	0.01	0.05	0.05	0.00	0.00	
Heavy Lift	0.00	0.02	0.03	0.00	0.00	

Total Emissions (ton)						
HC	CO	NOx	SOx	PM		
0.03	0.11	0.14	0.00	0.01		

Segment B

	Light Lift Suspension	Dead-End	Medium Lift Suspension	Dead-End	Heavy Lift Suspension	Dead-End
230 kV Construction						
Total	109	165	12	15	2	6
Number of Tower Site	1	0	1	0	1	0
Total Number of Trips	109	0	12	0	2	0

Summary of Total Number of Helicopter Trips

	230 kV Construction
Light Lift	109
Medium Lift	12
Heavy Lift	2

Assumptions in time period

	Min	Hour
to helicopter pod	5	0.08
from helicopter pod	5	0.08
load/trip	10	0.17

Total Required Time for Each Helicopter Round Trip

Helicopter Type	Working Hour/Round Trip	Idle Hour/Round Trip
Light Lift	0.33	0.033
Medium Lift	0.33	0.033
Heavy Lift	0.33	0.000

Total Time for Helicopter Operations (Hour)

Helicopter Type	230 kV Construction Total Working Hours	Total Idle Hours
Light Lift	36.33	3.63
Medium Lift	4.00	0.40
Heavy Lift	0.67	0.00

Relating Factors to Potential Construction/Operating Helicopters

Approach/Climbout	Engine HP	Number	Emissions lbs/hour	CO	NOx	SOx	PM
Light Lift	847	1	0.15	1.57	3.85	0.03	0.21
Medium Lift	1400	2	2.61	18.52	23.87	0.20	1.32
Heavy Lift	4500	2	8.40	59.52	76.74	0.64	4.25

Idle	Engine HP	Number	Emissions lbs/hour	CO	NOx	SOx	PM
Light Lift	847	1	6.83	3.24	0.15	0.01	0.01
Medium Lift	1400	2	48.28	84.23	0.75	0.03	0.05
Heavy Lift	4500	2	155.19	270.73	2.40	0.10	0.16

230 kV Construction - Total Emissions (lbs)

Helicopter Type	HC	CO	NOx	SOx	PM
Light Lift	30.70	68.78	140.45	1.16	7.64
Medium Lift	29.76	107.76	95.80	0.81	5.31
Heavy Lift	5.60	39.68	51.16	0.43	2.83

Total Emissions (ton)

Helicopter Type	HC	CO	NOx	SOx	PM
Light Lift	0.02	0.03	0.07	0.00	0.00
Medium Lift	0.01	0.05	0.05	0.00	0.00
Heavy Lift	0.00	0.02	0.03	0.00	0.00

Total Emissions (ton)

HC	CO	NOx	SOx	PM
0.03	0.11	0.14	0.00	0.01

Segment G

	Light Lift Suspension	Dead-End	Medium Lift Suspension	Dead-End	Heavy Lift Suspension	Dead-End
230 kV Construction						
Total	109	165	12	15	2	6
Number of Tower Site	1	0	1	0	1	0
Total Number of Trips	109	0	12	0	2	0

Summary of Total Number of Helicopter Trips

	230 kV Construction
Light Lift	109
Medium Lift	12
Heavy Lift	2

Assumptions in time period

	Min	Hour
to helicopter pod	5	0.08
from helicopter pod	5	0.08
loading	10	0.17

Total Required Time for Each Helicopter Round Trip

Helicopter Type	Working Hour/Round Trip	Idle Hour/Round Trip
Light Lift	0.33	0.033
Medium Lift	0.33	0.033
Heavy Lift	0.33	0.000

Total Time for Helicopter Operations (Hour)

Helicopter Type	230 kV Construction	Total Idle Hours
Light Lift	36.33	3.63
Medium Lift	4.00	0.40
Heavy Lift	0.67	0.00

Relating Factors to Potential Construction/Operating Helicopters

Approach/Climbout	Engine HP	Number	Emissions lb/hour					PM	CO2	CH4	N2O
			HC	CO	NOx	SOx					
Light Lift	847	1	0.15	1.57	3.85	0.03	0.21	1638.11	0.05	0.05	0.05
Medium Lift	1400	2	2.61	18.52	23.87	0.20	1.32	5177.39	0.14	0.17	0.17
Heavy Lift	4500	2	8.40	59.52	76.74	0.64	4.25	16641.60	0.47	0.53	0.53

Idle	Engine HP	Number	Emissions lb/hour					PM	CO2	CH4	N2O
			HC	CO	NOx	SOx					
Light Lift	847	1	6.93220627	3.237982495	0.154241734	0.006564567	0.01093913	169.86	0.00	0.01	0.01
Medium Lift	1400	2	48.28053105	84.22585663	0.746683128	0.028872282	0.046778875	342.55	0.01	0.01	0.01
Heavy Lift	4500	2	155.1874212	270.7259684	2.400552911	0.096018048	0.160003527	776.39	0.02	0.03	0.03

230 kV Construction - Total Emissions (lbs)

Helicopter Type	HC	CO	NOx	SOx	PM	CO2	CH4	N2O
Light Lift	30.70	66.79	140.45	1.16	7.64	60135.28	1.68	1.93
Medium Lift	29.76	107.76	85.80	0.81	5.31	20848.58	0.58	0.87
Heavy Lift	5.60	39.68	51.16	0.43	2.83	11094.40	0.31	0.36

Total Emissions (ton)

Helicopter Type	HC	CO	NOx	SOx	PM	CO2	CH4	N2O
Light Lift	0.02	0.03	0.07	0.00	0.00	65.00	0.00	0.00
Medium Lift	0.01	0.05	0.05	0.00	0.00	2048.42	0.06	0.07
Heavy Lift	0.00	0.02	0.03	0.00	0.00	21.21	0.00	0.00

Total Emissions (ton)

HC	CO	NOx	SOx	PM	CO2	CH4	N2O
0.03	0.11	0.14	0.00	0.01	2124.62	0.06	0.07

Table A-18
Annual Helicopter Emissions
Reconducting
Barren Ridge Renewable Transmission Project

Segment A - KCAPCD

Reconducting	Light Lift		Medium Lift		Heavy Lift	
	Suspension	Dead-End	Suspension	Dead-End	Suspension	Dead-End
Site Preparation						
Personnel to Site	6	6	0	0	0	0
Brush Clearing	16	16	0	0	0	0
Temporary Heli Pad Construction	6	6	0.5	0.5	0	0
Soil Borings	0	0	0.5	0.5	0	0
Incidental	12	12	0	0	0	0
Conductor Removal						
Personnel to Site	4	4	0	0	0	0
Insulators & Hardware & Travelers	8	12	0	0	0	0
Unclip Conductor & OHGW	4	0	0	0	0	0
Break Tension/Sock Thru	0	4	0	0	0	0
Remove Jumper Loops & OHGW	0	4	0	0	0	0
Incidental	4	4	0	0	0	0
Excavate Foundation						
Personnel to Site	4	4	0	0	0	0
Tools & Equipment to Site	2	1	1	1	0	0
Equipment (Air Compressor)	1	1	2	2	0	0
Footing Steel Removal	0	0	4	4	0	0
Incidental	0	0	0	0	0	0
Suspension Tower Removal						
Personnel to Site	4	4	0	0	0	0
Tools & Equipment to Site	4	4	0	0	0	0
Tower Components	0	0	4	6	2	6
Incidental	4	4	0	0	0	0
Conductor & OHGW Installation						
Personnel to Site	4	12	0	0	0	0
Install Insulators, Hardware & Travelers	8	24	0	0	0	0
Clip-In or Dead-end Conductor	6	12	0	1	0	0
Space Conductor	0	0	0	0	0	0
Install Jumper Loops	0	6	0	0	0	0
Incidental	8	24	0	0	0	0
Total Number of Trips per Tower Site	109	165	12	15	2	6
Number of Tower Site	66	2	66	2	66	2
Total Number of Trips	7194	330	792	30	132	12

230 kV Construction	Light Lift		Medium Lift		Heavy Lift	
	Suspension	Dead-End	Suspension	Dead-End	Suspension	Dead-End
Total	109	165	12	15	2	6
Number of Tower Site	66	2	66	2	66	2
Total Number of Trips	7194	330	792	30	132	12

Summary of Total Number of Helicopter Trips for Entire Tower Sites

	230 kV Construction
Hughes 500	
Light Lift	7524
Medium Lift	822
Heavy Lift	144
Assumptions in time period	Hour
to helicopter pod	5
from helicopter pod	5
load/rip	10

Total Required Time for Each Helicopter Round Trip

Helicopter Type	Working Hour/Round Trip	Idle Hour/Round Trip
Hughes 500	0.33	0.033
Light Lift	0.33	0.033
Medium Lift	0.33	0.033
Heavy Lift	0.33	0.033

	230 kV	
	Suspension	8118
	Dead End	372

Table A-18

Total Time for Helicopter Operations (Hour)

Helicopter Type	230 kV Construction Total Working Hours	Total Idle Hours
Hughes 500		
Light Lift	2508.00	250.80
Medium Lift	274.00	27.40
Heavy Lift	48.00	0.00

Relating Factors to Potential Construction/Operating Helicopters - (Copy&Pasted from helicopter emissions tab)

Approach/Climbout	Engine HP	Number	Emissions lbs/hour						
			HC	CO	NOx	SOx	PM	CO ₂	N ₂ O
Hughes 500	420	1	0.08	0.78	1.61	0.02	0.10	812.29	0.02
Light Lift	847	1	0.15	1.57	3.65	0.03	0.21	1638.11	0.05
Medium Lift	1400	2	2.61	18.52	23.87	0.20	1.32	5177.39	0.17
Heavy Lift	4500	2	8.40	59.52	76.74	0.64	4.25	16841.60	0.53

Idle	Engine HP	Number	Emissions lbs/hour						
			HC	CO	NOx	SOx	PM	CO ₂	N ₂ O
Hughes 500	420	1	3.44	1.61	0.08	0.00	0.01	169.86	0.00
Light Lift	847	1	6.93	3.24	0.15	0.01	0.01	342.55	0.01
Medium Lift	1400	2	48.28	84.23	0.75	0.03	0.05	776.39	0.03
Heavy Lift	4500	2	155.19	270.73	2.40	0.10	0.16	2505.19	0.08

230kV Construction - Total Emissions (lbs)

Helicopter Type	HC	CO	NOx	SOx	PM	CO ₂	CH ₄	N ₂ O
Hughes 500								
Light Lift	2119.33	4748.06	9684.64	80.38	527.54	4194300.34	117.34	134.70
Medium Lift	2038.66	7381.65	6562.12	55.19	363.78	1439958.63	40.28	46.24
Heavy Lift	403.04	2857.02	3683.52	30.62	204.07	789766.61	22.35	25.65

Total Emissions (lbs)

Helicopter Type	HC	CO	NOx	SOx	PM	CO ₂	CH ₄	N ₂ O
Hughes 500								
Light Lift	2119.33	4748.06	9684.64	80.38	527.54	4194300.34	117.34	134.70
Medium Lift	2038.66	7381.65	6562.12	55.19	363.78	1439958.63	40.28	46.24
Heavy Lift	403.04	2857.02	3683.52	30.62	204.07	789766.61	22.35	25.65

Total Emissions (ton)

Helicopter Type	HC	CO	NOx	SOx	PM	CO ₂	CH ₄	N ₂ O
Hughes 500								
Light Lift	1.06	2.37	4.85	0.04	0.26	2097.15	0.06	0.07
Medium Lift	1.02	3.69	3.28	0.03	0.18	719.88	0.02	0.02
Heavy Lift	0.20	1.43	1.84	0.02	0.10	399.40	0.01	0.01

Total Emissions (ton)

HC	CO	NOx	SOx	PM	CO ₂	CH ₄	N ₂ O
2.08	6.06	8.13	0.07	0.45	2817.13	0.08	0.09

Segment B - KAPCD

Reconductoring	Light Lift		Medium Lift		Heavy Lift	
	Suspension	Dead-End	Suspension	Dead-End	Suspension	Dead-End
Site Preparation						
Personnel to Site	6	6	0	0	0	0
Brush Clearing	16	16	0	0	0	0
Temporary Hel Pad Construction	6	6	0.5	0.5	0	0
Soil Borings	0	0	0.5	0.5	0	0
Incidentals	12	12	0	0	0	0
Conductor Removal						
Personnel to Site	4	4	0	0	0	0
Insulators & Hardware & Travelers	8	12	0	0	0	0
Uncle Conductor & OHGW	4	0	0	0	0	0
Break Tension/Sock Thru	0	4	0	0	0	0
Remove Jumper Loops & OHGW	0	4	0	0	0	0
Incidentals	4	4	0	0	0	0
Excavate Foundation						
Personnel to Site	4	4	0	0	0	0
Tools & Equipment to Site	2	2	1	1	0	0
Equipment (Air Compressor)	1	1	2	2	0	0
Footing Steel Removal	0	0	4	4	0	0
Incidentals	0	0	0	0	0	0
Suspension Tower Removal						
Personnel to Site	4	4	0	0	0	0
Tools & Equipment to Site	4	4	0	0	0	0
Tower Components	0	0	4	6	2	6
Incidentals	4	4	0	0	0	0
Conductor & OHGW Installation						
Personnel to Site	4	12	0	0	0	0
Install Insulators, Hardware & Travelers	8	24	0	0	0	0
Clip-in or Dead-end Conductor	4	12	0	1	0	0
Space Conductor	6	0	0	0	0	0
Install Jumper Loops	0	6	0	0	0	0
Incidentals	8	24	0	0	0	0
Total Number of Trips per Tower Site	109	165	12	15	2	6
Number of Tower Site	102	2	102	2	102	2
Total Number of Trips	11118	330	1224	30	204	12

230 KV Construction	Light Lift		Medium Lift		Heavy Lift	
	Suspension	Dead-End	Suspension	Dead-End	Suspension	Dead-End
Total	109	165	12	15	2	6
Number of Tower Site	102	2	102	2	102	2
Total Number of Trips	11118	330	1224	30	204	12

Summary of Total Number of Helicopter Trips for Entire Tower Sites

	230 KV Construction
Hughes 500	
Light Lift	11448
Medium Lift	1254
Heavy Lift	216

Assumptions in time period	Min	Hour
to helicopter pod	5	0.08
from helicopter pod	5	0.08
loading	10	0.17

Total Required Time for Each Helicopter Round Trip

Helicopter Type	Working Hour/Round Trip	Idle Hour/Round Trip
Hughes 500		
Light Lift	0.33	0.033
Medium Lift	0.33	0.033
Heavy Lift	0.33	0.000

	230 KV
	Suspension
	Dead End
	12546
	372

Total Time for Helicopter Operations (Hour)

Helicopter Type	230 kV Construction	
	Total Working Hours	Total Idle Hours
Hughes 500		
Light Lift	3815.00	381.60
Medium Lift	418.00	41.60
Heavy Lift	72.00	0.00

Relating Factors to Potential Construction/Operating Helicopters

Approach/Climbout	Engine HP	Number	Emissions lb/hour						
			HC	CO	NOx	SOx	PM	CO2	CH4
Hughes 500	420	1	0.08	0.78	1.91	0.02	0.10	812.29	0.02
Light Lift	847	1	0.15	1.43	3.65	0.03	0.21	1638.11	0.05
Medium Lift	1400	2	2.61	18.52	23.87	0.20	1.32	5177.39	0.14
Heavy Lift	4500	2	8.40	59.52	76.74	0.64	4.25	18641.60	0.47
Total Emissions (lb)									
Hughes 500	420	1	3.44	1.51	0.08	0.00	0.01	168.86	0.00
Light Lift	847	1	6.93	3.24	0.15	0.01	0.01	342.55	0.01
Medium Lift	1400	2	48.78	84.23	0.75	0.03	0.05	718.39	0.02
Heavy Lift	4500	2	155.19	270.73	2.40	0.10	0.16	2505.19	0.07
Total Emissions (ton)									
Hughes 500	420	1	3.44	1.51	0.08	0.00	0.01	168.86	0.00
Light Lift	847	1	6.93	3.24	0.15	0.01	0.01	342.55	0.01
Medium Lift	1400	2	48.78	84.23	0.75	0.03	0.05	718.39	0.02
Heavy Lift	4500	2	155.19	270.73	2.40	0.10	0.16	2505.19	0.07

230kV Construction - Total Emissions (lbs)

Helicopter Type	HC	CO	NOx	SOx	PM	CO2	CH4	N2O
Hughes 500								
Light Lift	3224.63	7224.32	14751.16	122.30	802.67	6381758.41	178.53	204.65
Medium Lift	3110.08	11261.06	10010.82	84.20	554.97	2189725.66	61.45	0.00
Heavy Lift	604.57	4285.53	5525.28	45.92	306.11	1189164.91	33.52	0.00

Total Emissions (lbs)

Helicopter Type	HC	CO	NOx	SOx	PM	CO2	CH4	N2O
Hughes 500								
Light Lift	3224.63	7224.32	14751.16	122.30	802.67	6381758.41	178.53	204.65
Medium Lift	3110.08	11261.06	10010.82	84.20	554.97	2189725.66	61.45	0.00
Heavy Lift	604.57	4285.53	5525.28	45.92	306.11	1189164.91	33.52	0.00

Total Emissions (ton)

Helicopter Type	HC	CO	NOx	SOx	PM	CO2	CH4	N2O
Hughes 500								
Light Lift	1.81	3.61	7.38	0.06	0.40	3190.88	0.09	0.10
Medium Lift	1.56	5.63	5.01	0.04	0.28	1088.36	0.03	0.00
Heavy Lift	0.30	2.14	2.76	0.02	0.15	599.10	0.02	0.00

Total Emissions (ton)

Helicopter Type	HC	CO	NOx	SOx	PM	CO2	CH4	N2O
Hughes 500								
Light Lift	3.47	11.39	15.14	0.13	0.83	4898.34	0.14	0.10

Segment B - AVAQMD

Reconducting	Light Lift		Medium Lift		Heavy Lift	
	Suspension	Dead-End	Suspension	Dead-End	Suspension	Dead-End
Site Preparation						
Personnel to Site	6	6	0	0	0	0
Brush Clearing	16	16	0	0	0	0
Temporary Helipad Construction	6	6	0.5	0.5	0	0
Soil Borings	0	0	0.5	0.5	0	0
Incidental	12	12	0	0	0	0
Conductor Removal						
Personnel to Site	4	4	0	0	0	0
Insulators & Hardware & Travelers	8	12	0	0	0	0
Undrip Conductor & OHGW	4	0	0	0	0	0
Break Tension/Sock Thru	0	4	0	0	0	0
Remove Jumper Loops & OHGW	0	4	0	0	0	0
Incidental	4	4	0	0	0	0
Excavate Foundation						
Personnel to Site	4	4	0	0	0	0
Tools & Equipment to Site	2	2	1	1	0	0
Equipment (Air Compressor)	1	1	2	2	0	0
Footings Steel Removal	0	0	4	4	0	0
Incidental	0	0	0	0	0	0
Suspension Tower Removal						
Personnel to Site	4	4	0	0	0	0
Tools & Equipment to Site	4	4	0	0	0	0
Tower Components	0	0	4	6	2	6
Incidental	4	4	0	0	0	0
Conductor & OHGW Installation						
Personnel to Site	4	12	0	0	0	0
Install Insulators, Hardware & Travelers	8	24	0	0	0	0
Clip-in or Dead-end Conductor	4	12	0	1	0	0
Space Conductor	6	0	0	0	0	0
Install Jumper Loops	0	6	0	0	0	0
Incidental	8	24	0	0	0	0
Total Number of Trips per Tower Site	109	165	12	15	2	6
Number of Tower Site	31	2	31	2	31	2
Total Number of Trips	3379	330	372	30	62	12

230 kV Construction	Light Lift		Medium Lift		Heavy Lift	
	Suspension	Dead-End	Suspension	Dead-End	Suspension	Dead-End
Total	109	165	12	15	2	6
Number of Tower Site	31	2	31	2	31	2
Total Number of Trips	3379	330	372	30	62	12

Summary of Total Number of Helicopter Trips for Entire Tower Sites

	230 kV Construction
Hughes 500	
Light Lift	3709
Medium Lift	402
Heavy Lift	74

Assumptions in time period	Min	Hour
to helicopter pod	5	0.08
from helicopter pod	5	0.08
load/rp	10	0.17

Total Required Time for Each Helicopter Round Trip

Helicopter Type	Working Hour/Round Trip	Idle Hour/Round Trip
Hughes 500		
Light Lift	0.33	0.033
Medium Lift	0.33	0.033
Heavy Lift	0.33	0.000

	230 kV	
	Suspension	3813
	Dead End	372

Total Time for Helicopter Operations (Hour)

Helicopter Type	Total Working Hours	Total Idle Hours
Hughes 500		
Light Lift	1236.33	123.63
Medium Lift	134.00	13.40
Heavy Lift	24.87	0.00

Relating Factors to Potential Construction/Operating Helicopters

Relating Factors to Potential Construction/Operating Helicopters										
Approach/Climbout	Engine HP	Number	Emissions lb/hour							
			HC	CO	NOx	SOx	PM	CO2	CH4	N2O
Hughes 500	420	1	0.08	0.78	1.91	0.02	0.10	812.29	0.02	0.03
Light Lift	847	1	0.15	1.57	3.85	0.03	0.21	1638.11	0.05	0.05
Medium Lift	1400	2	2.61	18.52	23.87	0.20	1.32	5177.39	0.14	0.17
Heavy Lift	4500	2	8.40	59.52	76.74	0.64	4.25	16641.60	0.47	0.53
Emissions lb/hour										
Idle	Engine HP	Number	HC	CO	NOx	SOx	PM	CO2	CH4	N2O
Hughes 500	420	1	3.44	1.61	0.08	0.00	0.01	169.86	0.00	0.01
Light Lift	847	1	6.93	3.24	0.15	0.01	0.01	342.55	0.01	0.01
Medium Lift	1400	2	48.28	84.23	0.75	0.03	0.05	776.39	0.02	0.03
Heavy Lift	4500	2	155.19	270.73	2.40	0.10	0.16	2505.19	0.07	0.08

230kV Construction - Total Emissions (lbs)

Helicopter Type	HC	CO	NOx	SOx	PM	CO2	CH4	N2O
Hughes 500								
Light Lift	1044.74	2340.58	4779.18	39.62	280.05	2067604.99	57.94	66.40
Medium Lift	997.01	3610.00	3209.21	26.99	177.81	704213.49	19.70	22.62
Heavy Lift	207.12	1488.19	1892.92	15.73	104.87	410492.70	11.48	13.19

Total Emissions (lbs)

Helicopter Type	HC	CO	NOx	SOx	PM	CO2	CH4	N2O
Hughes 500								
Light Lift	1044.74	2340.58	4779.18	39.62	280.05	2067604.99	57.94	0.00
Medium Lift	997.01	3610.00	3209.21	26.99	177.81	704213.49	19.70	0.00
Heavy Lift	207.12	1488.19	1892.92	15.73	104.87	410492.70	11.48	0.00

Total Emissions (ton)

Helicopter Type	HC	CO	NOx	SOx	PM	CO2	CH4	N2O
Hughes 500								
Light Lift	0.52	1.17	2.39	0.02	0.13	1033.80	0.03	0.00
Medium Lift	0.50	1.81	1.60	0.01	0.09	352.11	0.01	0.00
Heavy Lift	0.10	0.73	0.95	0.01	0.05	205.25	0.01	0.00

Total Emissions (ton)

HC	CO	NOx	SOx	PM	CO2	CH4	N2O
1.12	3.71	4.94	0.04	0.27	1385.91	0.04	0.00

Segment G - AVAQMD

Reconducting	Light Lift		Medium Lift		Heavy Lift	
	Suspension	Dead-End	Suspension	Dead-End	Suspension	Dead-End
Site Preparation						
Personnel to Site	6	6	0	0	0	0
Brush Clearing	16	16	0	0	0	0
Temporary Helipad Construction	6	6	0.5	0.5	0	0
Soil Borings	0	0	0.5	0.5	0	0
Incidental	12	12	0	0	0	0
Conductor Removal						
Personnel to Site	4	4	0	0	0	0
Insulators & Hardware & Travelers	8	12	0	0	0	0
Unclip Conductor & OHGW	4	0	0	0	0	0
Break Tension/Sock Thru	0	4	0	0	0	0
Remove Jumper Loops & OHGW	0	4	0	0	0	0
Incidental	4	4	0	0	0	0
Excavate Foundation						
Personnel to Site	4	4	0	0	0	0
Tools & Equipment to Site	2	2	1	1	0	0
Equipment (Air Compressor)	1	1	2	2	0	0
Footing Steel Removal	0	0	4	4	0	0
Incidental	0	0	0	0	0	0
Suspension Tower Removal						
Personnel to Site	4	4	0	0	0	0
Tools & Equipment to Site	4	4	0	0	0	0
Tower Components	0	0	4	4	2	2
Incidental	4	4	0	0	0	0
Conductor & OHGW Installation						
Personnel to Site	4	12	0	0	0	0
Install Insulators, Hardware & Travelers	8	24	0	0	0	0
Clip-in or Dead-end Conductor	4	12	0	1	0	0
Space Conductor	6	0	0	0	0	0
Install Jumper Loops	0	6	0	0	0	0
Incidental	8	24	0	0	0	0
Total Number of Trips per Tower Site	109	165	12	15	2	6
Number of Tower Site	31	2	31	2	31	2
Total Number of Trips	3379	330	372	30	62	12

230 kV Construction	Light Lift		Medium Lift		Heavy Lift	
	Suspension	Dead-End	Suspension	Dead-End	Suspension	Dead-End
Total	109	165	12	15	2	6
Number of Tower Site	31	2	31	2	31	2
Total Number of Trips	3379	330	372	30	62	12

Summary of Total Number of Helicopter Trips for Entire Tower Sites

230 kV Construction	
Hughes 500	
Light Lift	3706
Medium Lift	402
Heavy Lift	74

Assumptions in time period	
to helicopter pod	Min
from helicopter pod	5
loading	0.08
	0.17

Total Required Time for Each Helicopter Round Trip

Helicopter Type	Working Hour/Round Trip	Idle Hour/Round Trip
Hughes 500		
Light Lift	0.33	0.033
Medium Lift	0.33	0.033
Heavy Lift	0.33	0.000

230 kV	Suspension	Dead End
	372	3613
	62	372

Total Time for Helicopter Operations (Hour)

Helicopter Type	Total Working Hours	Total Idle Hours
Hughes 500		
Light Lift	1236.33	123.63
Medium Lift	134.00	13.40
Heavy Lift	24.67	0.00

Relating Factors to Potential Construction/Operating Helicopters

Approach/Climbout	Engine HP	Number	Emissions lbs/hour						
			HC	CO	SOx	PM	CO ₂	CH ₄	N ₂ O
Hughes 500	420	1	0.075225901	0.778198974	1.809181483	0.103759863	812.29	0.02	0.03
Light Lift	847	1	0.151705567	1.569367931	3.850182658	0.209248058	1638.11	0.05	0.05
Medium Lift	1400	2	2.612324268	18.51774157	23.87465867	1.322695827	5177.39	0.14	0.17
Heavy Lift	4500	2	8.396756542	59.5213122	76.73987751	4.2515223	16641.60	0.47	0.53

Idle	Engine HP	Number	Emissions lbs/hour						
			HC	CO	SOx	PM	CO ₂	CH ₄	N ₂ O
Hughes 500	420	1	3.437860641	1.605611155	0.003255157	0.005424382	169.88	0.00	0.01
Light Lift	847	1	6.93270627	3.237682495	0.015424134	0.01093913	342.55	0.01	0.01
Medium Lift	1400	2	48.28053105	84.22585683	0.746683128	0.048778875	779.38	0.02	0.03
Heavy Lift	4500	2	155.1874212	270.7259884	2.400052811	0.160003527	2505.18	0.07	0.08

230kV Construction - Total Emissions (lbs)

Helicopter Type	HC	CO	SOx	PM	CO ₂	CH ₄	N ₂ O
Hughes 500							
Light Lift	1044.74	2340.58	39.62	280.05	2087604.99	57.84	68.40
Medium Lift	987.01	3610.00	26.99	177.91	704213.49	18.70	22.62
Heavy Lift	207.12	1468.19	15.73	104.87	410492.70	11.48	13.18

Total Emissions (lbs)

Helicopter Type	HC	CO	SOx	PM	CO ₂	CH ₄	N ₂ O
Hughes 500							
Light Lift	1044.74	2340.58	39.62	280.05	2087604.99	57.84	0.00
Medium Lift	987.01	3610.00	26.99	177.91	704213.49	18.70	0.00
Heavy Lift	207.12	1468.19	15.73	104.87	410492.70	11.48	0.00

Total Emissions (ton)

Helicopter Type	HC	CO	SOx	PM	CO ₂	CH ₄	N ₂ O
Hughes 500							
Light Lift	0.52	1.17	0.02	0.13	1033.80	0.03	0.00
Medium Lift	0.50	1.81	0.01	0.09	352.11	0.01	0.00
Heavy Lift	0.10	0.73	0.01	0.05	205.25	0.01	0.00

Total Emissions (ton)

Helicopter Type	HC	CO	SOx	PM	CO ₂	CH ₄	N ₂ O
Hughes 500							
Light Lift	1.12	3.71	0.04	0.27	1385.91	0.04	0.00

Segment G - SCAQMD

Reconductoring	Light Lift		Medium Lift		Heavy Lift	
	Suspension	Dead-End	Suspension	Dead-End	Suspension	Dead-End
Site Preparation						
Personnel to Site	6	6	0	0	0	0
Brush Cleaning	16	16	0	0	0	0
Temporary Heli Pad Construction	6	6	0.5	0.5	0	0
Soil Borings	0	0	0.5	0.5	0	0
Incidental	12	12	0	0	0	0
Conductor Removal						
Personnel to Site	4	4	0	0	0	0
Insulators & Hardware & Travelers	8	12	0	0	0	0
Unclp Conductor & OHGW	4	0	0	0	0	0
Break Tension/Sock Thru	4	4	0	0	0	0
Remove Jumper Loops & OHGW	4	4	0	0	0	0
Incidental	4	4	0	0	0	0
Excavate Foundation						
Personnel to Site	4	4	0	0	0	0
Tools & Equipment to Site	2	2	1	1	0	0
Equipment (Air Compressor)	1	1	2	2	0	0
Footing Steel Removal	0	0	4	4	0	0
Incidental	0	0	0	0	0	0
Suspension Tower Removal						
Personnel to Site	4	4	0	0	0	0
Tools & Equipment to Site	4	4	0	0	0	0
Tower Components	0	0	4	6	2	6
Incidental	4	4	0	0	0	0
Conductor & OHGW Installation						
Personnel to Site	4	12	0	0	0	0
Install Insulators, Hardware & Travelers	8	24	0	0	0	0
Clip-in or Dead-end Conductor	4	12	0	1	0	0
Space Conductor	6	0	0	0	0	0
Install Jumper Loops	0	6	0	0	0	0
Incidental	8	24	0	0	0	0
Total Number of Trips per Tower Site	109	165	12	15	2	6
Number of Tower Site	73	2	73	2	73	2
Total Number of Trips	7957	330	876	30	146	12

230 kV Construction	Light Lift		Medium Lift		Heavy Lift	
	Suspension	Dead-End	Suspension	Dead-End	Suspension	Dead-End
Total	109	165	12	15	2	6
Number of Tower Site	73	2	73	2	73	2
Total Number of Trips	7957	330	876	30	146	12

Summary of Total Number of Helicopter Trips for Entire Tower Sites

230 kV Construction	
Hughes 500	
Light Lift	8287
Medium Lift	906
Heavy Lift	158
Assumptions in time period	
to helicopter pod	Min
from helicopter pod	5
load/ Trip	10
Total Required Time for Each Helicopter Round Trip	
Helicopter Type	Working Hour/Round Trip
Hughes 500	
Light Lift	0.33
Medium Lift	0.33
Heavy Lift	0.000

	230 kV	
	Suspension	8879
	Dead End	372

Total Time for Helicopter Operations (Hour)

Helicopter Type	230 kV Construction	
	Total Working Hours	Total Idle Hours
Hughes 500		
Light Lift	2762.33	276.23
Medium Lift	302.00	30.20
Heavy Lift	52.67	0.00

Relating Factors to Potential Construction/Operating Helicopters

Approach/Climbout	Engine HP	Number	Emissions lbs/hour							
			HC	CO	NOx	SOx	PM	CO2	CH4	N2O
Hughes 500	420	1	0.075225901	0.778198974	1.909181483	0.015566562	0.103759863	812.29	0.02	0.03
Light Lift	847	1	0.151705567	1.569367931	3.850192658	0.031392567	0.206249058	1638.11	0.05	0.06
Medium Lift	1400	2	2.612324258	18.51774157	23.87465967	0.186437299	1.322659827	5177.39	0.14	0.17
Heavy Lift	4500	2	8.396756542	59.5213122	76.73997751	0.637634776	4.2515223	16641.60	0.47	0.53

Idle	Engine HP	Number	Emissions lbs/hour							
			HC	CO	NOx	SOx	PM	CO2	CH4	N2O
Hughes 500	420	1	3.437660641	1.605811155	0.076483504	0.003255157	0.005474362	168.86	0.00	0.01
Light Lift	847	1	6.933220627	3.237892495	0.154241734	0.008564567	0.01063913	342.55	0.01	0.01
Medium Lift	1400	2	48.2803105	84.22595683	0.746683128	0.028972282	0.048778875	779.39	0.02	0.03
Heavy Lift	4500	2	155.1874212	270.7258684	2.400652911	0.066018048	0.160003527	2505.19	0.07	0.08

230kV Construction - Total Emissions (lbs)

Helicopter Type	HC	CO	NOx	SOx	PM	CH4	N2O
Hughes 500							
Light Lift	2334.25	5229.56	10076.09	88.53	581.04	129.24	148.36
Medium Lift	2246.99	8135.98	7232.70	60.83	400.96	44.40	50.97
Heavy Lift	442.23	3134.79	4041.64	33.59	223.91	24.52	28.15

Total Emissions (lbs)

Helicopter Type	HC	CO	NOx	SOx	PM	CH4	N2O
Hughes 500							
Light Lift	2334.25	5229.56	10076.09	88.53	581.04	129.24	0.00
Medium Lift	2246.99	8135.98	7232.70	60.83	400.96	44.40	0.00
Heavy Lift	442.23	3134.79	4041.64	33.59	223.91	24.52	0.00

Total Emissions (ton)

Helicopter Type	HC	CO	NOx	SOx	PM	CH4	N2O
Hughes 500							
Light Lift	1.17	2.61	5.34	0.04	0.29	0.06	0.00
Medium Lift	1.12	4.07	3.62	0.03	0.20	0.02	0.00
Heavy Lift	0.22	1.57	2.02	0.02	0.11	0.01	0.00

Total Emissions (ton)

HC	CO	NOx	SOx	PM	CH4	N2O
2.51	8.25	10.98	0.06	0.60	0.09	0.00

Segment K - SCAQMD

Reconductoring	Light Lift		Medium Lift		Heavy Lift	
	Suspension	Dead-End	Suspension	Dead-End	Suspension	Dead-End
Site Preparation						
Personnel to Site	6	6	0	0	0	0
Brush Clearing	16	16	0	0	0	0
Temporary Hel Pad Construction	6	6	0.5	0.5	0	0
Soil Bombs	0	0	0	0	0	0
Incidental	12	12	0	0	0	0
Conductor Removal						
Personnel to Site	4	4	0	0	0	0
Insulators & Hardware & Travelers	8	12	0	0	0	0
Unleap Conductor & OHGW	4	0	0	0	0	0
Break Tension/Sock Thru	0	4	0	0	0	0
Remove Jumper Loops & OHGW	0	4	0	0	0	0
Incidental	4	4	0	0	0	0
Excavate Foundation						
Personnel to Site	4	4	0	0	0	0
Tools & Equipment to Site	2	2	1	1	0	0
Equipment (Air Compressor)	1	1	2	2	0	0
Footing Steel Removal	0	0	4	4	0	0
Incidental	0	0	0	0	0	0
Suspension Tower Removal						
Personnel to Site	4	4	0	0	0	0
Tools & Equipment to Site	4	4	0	0	0	0
Tower Components	0	0	4	6	2	6
Incidental	4	4	0	0	0	0
Conductor & OHGW Installation						
Personnel to Site	4	12	0	0	0	0
Install Insulators, Hardware & Travelers	8	24	0	0	0	0
Clip-in or Dead-end Conductor	4	12	0	1	0	0
Space Conductor	6	0	0	0	0	0
Install Jumper Loops	0	6	0	0	0	0
Incidental	8	24	0	0	0	0
Total Number of Trips per Tower Site	109	165	12	15	2	6
Number of Tower Site	77	2	77	2	77	2
Total Number of Trips	8393	330	924	30	154	12

230 kV Construction	Light Lift		Medium Lift		Heavy Lift	
	Suspension	Dead-End	Suspension	Dead-End	Suspension	Dead-End
Total	109	165	12	15	2	6
Number of Tower Site	77	2	77	2	77	2
Total Number of Trips	8393	330	924	30	154	12

Summary of Total Number of Helicopter Trips for Entire Tower Sites

230 kV Construction	
Hughes 500	
Light Lift	8723
Medium Lift	954
Heavy Lift	166

Assumptions in time period	
to helicopter pod	Min
from helicopter pod	5
loading	0.08
	0.17

Total Required Time for Each Helicopter Round Trip

Helicopter Type	
Hughes 500	
Light Lift	0.33
Medium Lift	0.33
Heavy Lift	0.00

	230 kV
	Suspension
	Dead End
	9471
	372

Total Time for Helicopter Operations (Hour)

Helicopter Type	Total Working Hours	Total Idle Hours
Hughes 500		
Light Lift	2607.67	260.77
Medium Lift	318.00	31.80
Heavy Lift	55.33	0.00

Relating Factors to Potential Construction/Operating Helicopters

Approach/Climbout	Engine HP	Number	HC	CO	NOx	SOx	PM	CO2	CH4	N2O
Hughes 500	0	0	0.08	0.78	1.91	0.02	0.10	812.29	0.02	0.00
Light Lift	0	0	0.15	1.57	3.65	0.03	0.21	1935.11	0.05	0.05
Medium Lift	0	0	2.61	18.52	23.97	0.20	1.32	5177.39	0.14	0.17
Heavy Lift	0	0	8.40	59.52	76.74	0.64	4.25	10941.60	0.47	0.53

Idle	Engine HP	Number	HC	CO	NOx	SOx	PM	CO2	CH4	N2O
Hughes 500	0	0	3.44	1.61	0.08	0.00	0.01	169.86	0.00	0.01
Light Lift	0	0	6.93	3.24	0.15	0.01	0.05	399.55	0.01	0.01
Medium Lift	0	0	48.28	84.23	0.75	0.03	0.65	776.38	0.02	0.03
Heavy Lift	0	0	155.78	270.73	2.40	0.10	0.18	2505.19	0.07	0.08

220kV Construction - Total Emissions (lbs)

Helicopter Type	HC	CO	NOx	SOx	PM	CO2	CH4	N2O
Hughes 500								
Light Lift	2457.06	5504.70	11235.90	93.19	611.61	4892690.30	136.04	156.19
Medium Lift	2356.04	8567.02	7615.89	64.05	422.20	1671193.21	46.75	53.67
Heavy Lift	464.62	3283.51	4246.28	35.29	235.25	920834.98	25.76	29.57

Total Emissions (lbs)

Helicopter Type	HC	CO	NOx	SOx	PM	CO2	CH4	N2O
Hughes 500								
Light Lift	2457.06	5504.70	11235.90	93.19	611.61	4892690.30	136.04	0.00
Medium Lift	2356.04	8567.02	7615.89	64.05	422.20	1671193.21	46.75	0.00
Heavy Lift	464.62	3283.51	4246.28	35.29	235.25	920834.98	25.76	0.00

Total Emissions (ton)

Helicopter Type	HC	CO	NOx	SOx	PM	CO2	CH4	N2O
Hughes 500								
Light Lift	1.23	2.75	5.62	0.05	0.31	2431.35	0.07	0.00
Medium Lift	1.18	4.28	3.81	0.03	0.21	835.80	0.02	0.00
Heavy Lift	0.23	1.65	2.12	0.02	0.12	460.42	0.01	0.00

Total Emissions (ton)

HC	CO	NOx	SOx	PM	CO2	CH4	N2O
2.64	8.68	11.55	0.10	0.63	3266.94	0.09	0.00

Table A-19
Maximum Daily Helicopter Emissions
New Construction
Barnes Ridge Renewable Transmission Project

# tower/day	KCAPCD	KCAPCD	KCAPCD	AVAQMD	AVAQMD	SCAQMD
Construction	Segment A	Segment B	Segment B	Segment G	Segment G	
Hughes 500	1	1	1	1	1	
Medium Lift	1	1	1	1	1	
Heavy Lift	1	1	1	1	1	

# trip/day	KCAPCD	KCAPCD	AVAQMD	AVAQMD	SCAQMD
Construction	Segment A	Segment B	Segment B	Segment G	Segment G
Hughes 500	108	108	108	0	0
Medium Lift	1	1	1	0	230 kV
Heavy Lift	0	0	0	0	0

Segment A - KCAPCD

	Light Lift Suspension	Dead-End	Medium Lift Suspension	Dead-End	Heavy Lift Suspension	Dead-End
230 kV Construction						
Total	30	78	0	1	0	0
Number of Tower Site	1	1	1	1	1	1
Total Number of Trips	30	78	0	1	0	0

Summary of Total Number of Helicopter Trips

	230 kV Construction
Hughes 500	108
Medium Lift	1
Heavy Lift	0

Assumptions in time period

	Min	Hour
to helicopter pod	5	0.08
from helicopter pod	5	0.08
load/rip	10	0.17

Total Required Time for Each Helicopter Round Trip

Helicopter Type	Working Hour/Round Trip	Idle Hour/Round Trip
Hughes 500	0.33	0.033
Medium Lift	0.33	0.033
Heavy Lift	0.33	0.000

Total Time for Helicopter Operations (Hour)

Helicopter Type	230 kV Construction Total Working Hours	Total Idle Hours
Hughes 500	36.00	3.60
Medium Lift	0.33	0.03
Heavy Lift	0.00	0.00

Relating Factors to Potential Construction/Operating Helicopters

Approach/Climbout	Engine HP	Number	Emissions lbs/hour	CO	NOx	SOx	PM
Hughes 500	420	2	HC	1.56	3.82	0.03	0.21
Medium Lift	1400	2	0.15	18.52	23.87	0.20	1.32
Heavy Lift	4500	2	2.61	59.52	76.74	0.64	4.25
			8.40				
Idle	Engine HP	Number	Emissions lbs/hour	CO	NOx	SOx	PM
Hughes 500	420	2	HC	3.21	0.15	0.01	0.01
Medium Lift	1400	2	6.88	84.23	0.75	0.03	0.05
Heavy Lift	4500	2	155.19	270.73	2.40	0.10	0.16

230 kV Construction - Total Emissions (lbs)

Helicopter Type	HC	CO	NOx	SOx	PM
Hughes 500	30.17	67.59	138.01	1.14	7.51
Medium Lift	2.48	8.88	7.88	0.07	0.44
Heavy Lift	0.00	0.00	0.00	0.00	0.00

Maximum Daily Helicopter Emissions
New Construction
Barren Ridge Renewable Transmission Project

Total Emissions (ton)						
Helicopter Type	HC	CO	NOx	SOx	PM	
Hughes 500	0.02	0.03	0.07	0.00	0.00	
Medium Lift	0.00	0.00	0.00	0.00	0.00	
Heavy Lift	0.00	0.00	0.00	0.00	0.00	
Total Emissions (ton)						
HC	0.02	0.04	0.07	0.00	PM	0.00

Segment B

230 kV Construction	Light Lift		Medium Lift		Heavy Lift	
	Suspension	Dead-End	Suspension	Dead-End	Suspension	Dead-End
Total	30	78	0	1	0	0
Number of Tower Site	1	1	1	1	1	0
Total Number of Trips	30	78	0	1	0	0

Summary of Total Number of Helicopter Trips

230 kV Construction	230 kV	
	Suspension	Dead-End
Hughes 500		
Medium Lift		
Heavy Lift		

Assumptions in time period

	Min	Hour
to helicopter pod	5	0.08
from helicopter pod	5	0.08
load/trip	10	0.17

Total Required Time for Each Helicopter Round Trip

Helicopter Type	Working Hour/Round Trip	Idle Hour/Round Trip
Hughes 500	0.33	0.033
Medium Lift	0.33	0.033
Heavy Lift	0.33	0.000

Total Time for Helicopter Operations (Hour)

Helicopter Type	230 kV Construction	
	Total Working Hours	Total Idle Hours
Hughes 500	36.00	3.60
Medium Lift	0.33	0.03
Heavy Lift	0.00	0.00

Relating Factors to Potential Construction/Operating Helicopters

Approach/Climbout	Engine HP	Number	Emissions lbs/hour				
			HC	CO	NOx	SOx	PM
Hughes 500	420	2	0.15	1.56	3.82	0.03	0.21
Medium Lift	1400	2	2.61	18.52	23.87	0.20	1.32
Heavy Lift	4500	2	8.40	59.52	76.74	0.64	4.25
Idle							
Hughes 500	420	2	6.88	3.21	NOx	SOx	PM
Medium Lift	1400	2	48.28	84.23	0.75	0.03	0.05
Heavy Lift	4500	2	155.19	270.73	2.40	0.10	0.16

230 kV Construction - Total Emissions (lbs)

Helicopter Type	HC	CO	NOx	SOx	PM
Hughes 500	30.17	67.59	138.01	1.14	7.51
Medium Lift	2.48	8.88	7.98	0.07	0.44
Heavy Lift	0.00	0.00	0.00	0.00	0.00

Total Emissions (ton)

Helicopter Type	HC	CO	NOx	SOx	PM
Hughes 500	0.02	0.03	0.07	0.00	0.00
Medium Lift	0.00	0.00	0.00	0.00	0.00
Heavy Lift	0.00	0.00	0.00	0.00	0.00

Total Emissions (ton)

HC	CO	NOx	SOx	PM
0.02	0.04	0.07	0.00	0.00

Table A-19
Maximum Daily Helicopter Emissions
New Construction
Barron Ridge Renewable Transmission Project

Segment G

	Light Lift Suspension	Dead-End	Medium Lift Suspension	Dead-End	Heavy Lift Suspension	Dead-End
230 kV Construction	30	78	0	1	0	0
Total	1	1	1	1	1	1
Number of Tower Site	30	78	0	1	0	0
Total Number of Trips						

Summary of Total Number of Helicopter Trips

	230 kV Construction
Hughes 500	108
Medium Lift	1
Heavy Lift	0

Assumptions in time period

	Min	Hour
to Helicopter pod	5	0.08
from Helicopter pod	5	0.08
Total Trip	10	0.17

Total Required Time for Each Helicopter Round Trip

Helicopter Type	Working Hour/Round Trip	Idle Hour/Round Trip
Hughes 500	0.33	0.033
Medium Lift	0.33	0.033
Heavy Lift	0.33	0.000

Total Time for Helicopter Operations (Hour)

Helicopter Type	230 kV Construction	Total Idle Hours
Hughes 500	36.00	3.60
Medium Lift	0.33	0.03
Heavy Lift	0.00	0.00

Relating Factors to Potential Construction/Operating Helicopters

Relating Factors to Potential Construction Operating HC/CO2 Emissions											
Approach/Climbout		Engine HP	Number	Emissions lb/hour		HC	CO	NOx	SOx	PM	CO2
		420	2	0.15	1.56	3.82	0.03	0.21	1624.58	0.05	0.05
	Hughes 500	1400	2	2.61	18.52	23.87	0.20	1.32	5177.39	0.14	0.17
	Medium Lift	4500	2	8.40	59.52	76.74	0.64	4.25	16641.60	0.47	0.53
	Heavy Lift										
Idle		Engine HP	Number	Emissions lb/hour		HC	CO	NOx	SOx	PM	CO2
		420	2	6.88	3.21	0.15	0.01	0.01	339.72	0.01	0.01
	Hughes 500	1400	2	48.28053105	84.22565683	0.746683128	0.028872282	0.049778875	342.55	0.01	0.01
	Medium Lift	4500	2	155.1874212	270.7256684	2.400052811	0.096018048	0.160003527	779.39	0.02	0.03
	Heavy Lift										

230 kV Construction - Total Emissions (lbs)

Helicopter Type	HC	CO	NOx	SOx	CO2	CH4	N2O
Hughes 500	30.17	67.59	138.01	1.14	59707.70	1.67	1.92
Medium Lift	2.48	8.98	7.98	0.07	1737.21	0.05	0.06
Heavy Lift	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Total Emissions (ton)

Helicopter Type	HC	CO	NOx	SOx	CO2	CH4	N2O
Hughes 500	0.02	0.03	0.07	0.00	54.52	0.00	0.00
Medium Lift	0.00	0.00	0.00	0.00	2037.06	0.00	0.00
Heavy Lift	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Total Emissions (ton)

HC	CO	NOx	SOx	CO2	CH4	N2O
0.02	0.04	0.07	0.00	2091.58	0.06	0.07

# Towers	KCAPCD	KCAPCD	AVAQMD	KCAPCD	KCAPCD	AVAQMD	KCAPCD	KCAPCD	AVAQMD	KCAPCD	AVAQMD	SCAQMD	SCAQMD	AVAQMD	SCAQMD	SCAQMD	SCAQMD
Construction Towers Per Air District	Segment A 0.6	Segment B 1.02	Segment B 0.2	Segment B 31	Segment B 12.53	Segment D 63	Segment D 11.1	Segment D 22.27	Segment D 5.2	Segment E 7.28	Segment E 3.6	Segment F 18	Segment F 73	Segment G 26	Segment H 71	Segment I 14.16	Segment J 11.87

Helicopter-Hughes500 Emissions

Total Time for Helicopter Operations (Hours)			
Helicopter Type	Total Working Hours	Total Idle Hours	
Segment A - KCAPCD	Hughes 500	13.7	
Segment B - KCAPCD	Hughes 500	20.3	
Segment C - AVAQMD	Hughes 500	6.2	
Segment D - KCAPCD	Hughes 500	21.68	
Segment E - AVAQMD	Hughes 500	12.53	
Segment F - KCAPCD	Hughes 500	13.2	
Segment G - SCAQMD	Hughes 500	22.27	
Segment H - AVAQMD	Hughes 500	5.03	
Segment I - SCAQMD	Hughes 500	7.25	
Segment J - AVAQMD	Hughes 500	3.6	
Segment K - AVAQMD	Hughes 500	6.2	
Segment L - SCAQMD	Hughes 500	14.6	
Segment M - AVAQMD	Hughes 500	5.2	
Segment N - SCAQMD	Hughes 500	14.57	
Segment O - AVAQMD	Hughes 500	17.71	
Segment P - SCAQMD	Hughes 500	14.15	
Segment Q - SCAQMD	Hughes 500	11.87	

Relating Factors to Potential Construction/Operating Helicopters

Helicopter Type	Engine HP	Number	Emissions lb/hour							
Approach/Climb/Idle			HC	CO	NOx	SOx	PM	CO2	CH4	N2O
Hughes 500	420	1	0.08	0.78	1.81	0.02	0.10	812.29	0.02	0.03
Hughes 500	420	1	3.44	1.61	0.08	0.00	0.01	169.86	0.00	0.01

Maximum Daily Emissions (lbs) (all segments)

Helicopter Type	HC	CO	NOx	SOx	PM	CO2	CH4	N2O
All Segments	2.10	4.69	9.55	0.08	0.52	4146.37	0.12	0.13

Total Emissions (lbs)

Helicopter Type	HC	CO	NOx	SOx	PM	CO2	CH4	N2O
Segment A - KCAPCD	55.52	121.39	252.88	3.23	15.82	10957.16	3.97	3.53
Segment B - KCAPCD	46.06	100.57	389.12	3.23	14.17	10957.16	3.97	3.53
Segment C - AVAQMD	25.98	58.20	118.84	0.99	6.47	5144.97	1.44	1.66
Segment D - KCAPCD	90.84	203.52	415.57	3.45	22.61	17978.53	5.93	5.77
Segment E - AVAQMD	52.50	117.63	240.18	1.98	13.07	103607.98	2.91	3.34
Segment F - SCAQMD	55.31	123.92	253.02	2.10	13.77	109464.12	3.96	3.52
Segment G - SCAQMD	93.32	209.06	426.88	3.54	23.23	184679.24	5.17	5.93
Segment H - AVAQMD	21.08	47.22	96.42	0.80	5.25	41712.47	1.17	1.34
Segment I - SCAQMD	30.38	66.06	138.97	1.15	7.56	60122.34	1.88	1.93
Segment J - AVAQMD	15.08	33.80	69.01	0.57	3.75	29853.65	0.84	0.96
Segment K - SCAQMD	25.98	58.20	118.84	0.99	6.47	5144.97	1.44	1.66
Segment L - AVAQMD	61.18	137.06	279.86	2.32	15.23	121073.95	3.39	3.89
Segment M - SCAQMD	21.79	48.92	99.68	0.83	5.42	43122.23	1.21	1.38
Segment N - AVAQMD	61.18	137.06	279.86	2.32	15.20	120825.17	3.38	3.88
Segment O - SCAQMD	21.79	48.92	99.68	0.83	5.42	43122.23	1.21	1.38
Segment P - AVAQMD	59.20	132.25	279.47	2.81	18.47	148864.37	4.11	4.72
Segment Q - SCAQMD	59.20	132.25	279.47	2.81	18.47	148864.37	4.11	4.72
Segment R - SCAQMD	50.16	112.37	229.44	1.90	12.48	99264.06	2.78	3.19

Total Emissions (ton)

Helicopter Type	HC	CO	NOx	SOx	PM	CO2	CH4	N2O
Segment A - KCAPCD	0.03	0.06	0.13	0.00	0.01	54.94	0.00	0.00
Segment B - KCAPCD	0.04	0.10	0.19	0.00	0.01	84.17	0.00	0.00
Segment C - AVAQMD	0.01	0.03	0.06	0.00	0.00	25.71	0.00	0.00
Segment D - KCAPCD	0.05	0.10	0.21	0.00	0.01	89.89	0.00	0.00
Segment E - AVAQMD	0.03	0.06	0.12	0.00	0.01	51.95	0.00	0.00
Segment F - SCAQMD	0.03	0.06	0.13	0.00	0.01	54.73	0.00	0.00
Segment G - SCAQMD	0.05	0.10	0.21	0.00	0.01	92.34	0.00	0.00
Segment H - AVAQMD	0.01	0.02	0.05	0.00	0.00	20.86	0.00	0.00
Segment I - SCAQMD	0.03	0.07	0.07	0.00	0.00	30.06	0.00	0.00
Segment J - AVAQMD	0.01	0.03	0.06	0.00	0.00	14.93	0.00	0.00
Segment K - SCAQMD	0.01	0.03	0.06	0.00	0.00	25.71	0.00	0.00
Segment L - AVAQMD	0.03	0.07	0.14	0.00	0.01	60.43	0.00	0.00
Segment M - SCAQMD	0.03	0.07	0.14	0.00	0.01	60.43	0.00	0.00
Segment N - AVAQMD	0.03	0.07	0.14	0.00	0.01	73.43	0.00	0.00
Segment O - SCAQMD	0.03	0.07	0.14	0.00	0.01	59.67	0.00	0.00
Segment P - SCAQMD	0.03	0.07	0.14	0.00	0.01	59.67	0.00	0.00
Segment Q - SCAQMD	0.03	0.06	0.11	0.00	0.01	49.63	0.00	0.00

Table A-21
Construction Emissions - Segment A
New 230 kV Transmission Line
Barren Ridge Renewable Transmission Project

Emissions Summary - 2013

Segment		Emissions, tons/year					
		ROG tons (total)	CO tons (total)	NOX tons (total)	SOX tons (total)	PM10 tons (total)	PM2.5 tons (total)
A	Miles per Air District						
KCAPCD	13.25						
<i>Construction Inspection</i>							
Worker Trips		0.00	0.08	0.01	0.00	0.39	0.04
Construction Trucks		0.00	0.07	0.01	0.00	0.39	0.04
		0.01	0.15	0.01	0.00	0.77	0.08
<i>Marshalling Yards</i>							
Heavy Construction Equipment		0.04	0.28	0.26	0.00	0.02	0.02
Worker Trips		0.00	0.08	0.01	0.00	0.39	0.04
Construction Trucks		0.01	0.05	0.06	0.00	0.42	0.05
		0.05	0.41	0.33	0.00	0.83	0.11
<i>Survey</i>							
Worker Trips		0.00	0.02	0.00	0.00	0.08	0.01
Construction Trucks		0.00	0.01	0.00	0.00	0.04	0.00
		0.00	0.02	0.00	0.00	0.11	0.01
<i>Road Work and Structure Pads</i>							
Heavy Construction Equipment		0.09	0.41	0.70	0.00	0.04	0.04
Worker Trips		0.00	0.04	0.00	0.00	0.19	0.02
Construction Trucks		0.00	0.02	0.06	0.00	0.31	0.04
Fugitive Dust						1.51	0.52
		0.10	0.47	0.76	0.00	2.05	0.61
<i>Guard Poles</i>							
Heavy Construction Equipment		0.00	0.01	0.03	0.00	0.00	0.00
Worker Trips		0.00	0.01	0.00	0.00	0.05	0.01
Construction Trucks		0.00	0.00	0.01	0.00	0.03	0.00
		0.00	0.02	0.03	0.00	0.08	0.01
<i>Foundations and Rebar Cages</i>							
Heavy Construction Equipment		0.11	0.58	0.94	0.00	0.04	0.04
Worker Trips		0.01	0.18	0.02	0.00	0.86	0.09
Construction Trucks		0.00	0.00	0.01	0.00	0.10	0.01
Fugitive Dust						0.00	0.00
		0.12	0.77	0.98	0.00	1.00	0.14
<i>Steel (Hauling, Shake-Out, Light Assembly, Heavy Assembly, Erection)</i>							
Heavy Construction Equipment		0.41	6.09	1.37	0.00	0.03	0.02
Worker Trips		0.03	0.57	0.06	0.00	2.70	0.27
Construction Trucks		0.00	0.10	0.03	0.00	0.67	0.07
		0.44	6.77	1.46	0.00	3.40	0.37
<i>Conductor (Sheaves, Insulators, Stringing, Clipping, Dampers, Deadending)</i>							
Heavy Construction Equipment		0.08	0.65	0.60	0.00	0.03	0.02
Worker Trips		0.01	0.18	0.02	0.00	0.87	0.09
Construction Trucks		0.00	0.11	0.15	0.00	0.62	0.07
Helicopter		0.03	0.06	0.13	0.00	0.01	0.01
		0.12	1.00	0.89	0.00	1.52	0.18
<i>Cleanup and Restoration</i>							
Heavy Construction Equipment		0.04	0.22	0.31	0.00	0.02	0.02
Worker Trips		0.00	0.03	0.00	0.00	0.16	0.02
Construction Trucks		0.00	0.00	0.00	0.00	0.11	0.01
		0.04	0.26	0.32	0.00	0.29	0.05
Total Segment A - KCAPCD	Max Day	0.89	9.87	4.78	0.01	10.07	1.55
Total Segment A - BLM	3.67	0.25	2.73	1.32	0.00	2.79	0.43
Total Segment A - USFS	0						

Table A-23
Construction Emissions - Segment C
New 230 kV Transmission Line
Barren Ridge Renewable Transmission Project

Emissions Summary - 2013

		Emissions, tons/year					
		ROG tons (total)	CO tons (total)	NOX tons (total)	SOX tons (total)	PM10 tons (total)	PM2.5 tons (total)
Segment							
C	Miles per Air District						
KCAPCD	21.68						
<i>Construction Inspection</i>							
Worker Trips		0.01	0.13	0.01	0.00	0.63	0.06
Construction Trucks		0.00	0.11	0.01	0.00	0.63	0.06
		0.01	0.25	0.02	0.00	1.26	0.13
<i>Marshalling Yards</i>							
Heavy Construction Equipment		0.07	0.45	0.43	0.00	0.04	0.03
Worker Trips		0.01	0.13	0.01	0.00	0.63	0.06
Construction Trucks		0.01	0.09	0.10	0.00	0.69	0.08
		0.08	0.67	0.54	0.00	1.35	0.18
<i>Survey</i>							
Worker Trips		0.00	0.03	0.00	0.00	0.12	0.01
Construction Trucks		0.00	0.01	0.00	0.00	0.06	0.01
		0.00	0.04	0.00	0.00	0.19	0.02
<i>Road Work and Structure Pads</i>							
Heavy Construction Equipment		0.15	0.67	1.15	0.00	0.07	0.06
Worker Trips		0.00	0.07	0.01	0.00	0.31	0.03
Construction Trucks		0.01	0.03	0.09	0.00	0.51	0.06
Fugitive Dust						2.46	0.85
		0.16	0.77	1.25	0.00	3.35	1.00
<i>Guard Poles</i>							
Heavy Construction Equipment		0.00	0.01	0.04	0.00	0.00	0.00
Worker Trips		0.00	0.02	0.00	0.00	0.08	0.01
Construction Trucks		0.00	0.00	0.01	0.00	0.05	0.01
		0.01	0.03	0.06	0.00	0.13	0.02
<i>Foundations and Rebar Cages</i>							
Heavy Construction Equipment		0.18	0.95	1.54	0.00	0.06	0.06
Worker Trips		0.01	0.30	0.03	0.00	1.40	0.14
Construction Trucks		0.00	0.01	0.02	0.00	0.17	0.02
Fugitive Dust						0.00	0.00
		0.20	1.26	1.60	0.00	1.64	0.22
<i>Steel (Hauling, Shake-Out, Light Assembly, Heavy Assembly, Erection)</i>							
Heavy Construction Equipment		0.67	9.97	2.25	0.00	0.04	0.04
Worker Trips		0.05	0.94	0.09	0.00	4.42	0.45
Construction Trucks		0.01	0.17	0.05	0.00	1.10	0.12
		0.72	11.07	2.39	0.00	5.56	0.60
<i>Conductor (Sheaves, Insulators, Stringing, Clipping, Dampers, Deadending)</i>							
Heavy Construction Equipment		0.13	1.06	0.97	0.00	0.04	0.04
Worker Trips		0.01	0.30	0.03	0.00	1.42	0.14
Construction Trucks		0.01	0.18	0.24	0.00	1.02	0.11
Helicopter		0.05	0.10	0.21	0.00	0.01	0.01
		0.20	1.64	1.45	0.00	2.49	0.30
<i>Cleanup and Restoration</i>							
Heavy Construction Equipment		0.07	0.36	0.51	0.00	0.03	0.03
Worker Trips		0.00	0.06	0.01	0.00	0.26	0.03
Construction Trucks		0.00	0.00	0.01	0.00	0.18	0.02
		0.07	0.42	0.52	0.00	0.48	0.08
Total Segment C - KCAPCD	Max Daily	1.45	16.15	7.83	0.01	16.46	2.54
Total Segment C - BLM	0	0.00	0.00	0.00	0.00	0.00	0.00
Total Segment C - USFS	0	0.00	0.00	0.00	0.00	0.00	0.00

Table A-24
Construction Emissions - Segment D
New 230 kV Transmission Line
Barren Ridge Renewable Transmission Project

Emissions Summary - 2013

		Emissions, tons/year					
		ROG tons (total)	CO tons (total)	NOX tons (total)	SOX tons (total)	PM10 tons (total)	PM2.5 tons (total)
Segment							
D	Miles per Air District						
KCAPCD	12.53						
<i>Construction Inspection</i>							
Worker Trips		0.00	0.08	0.01	0.00	0.37	0.04
Construction Trucks		0.00	0.07	0.01	0.00	0.37	0.04
		0.01	0.14	0.01	0.00	0.73	0.07
<i>Marshalling Yards</i>							
Heavy Construction Equipment		0.04	0.26	0.25	0.00	0.02	0.02
Worker Trips		0.00	0.08	0.01	0.00	0.37	0.04
Construction Trucks		0.00	0.05	0.06	0.00	0.40	0.05
		0.05	0.39	0.31	0.00	0.78	0.10
<i>Survey</i>							
Worker Trips		0.00	0.02	0.00	0.00	0.07	0.01
Construction Trucks		0.00	0.01	0.00	0.00	0.04	0.00
		0.00	0.02	0.00	0.00	0.11	0.01
<i>Road Work and Structure Pads</i>							
Heavy Construction Equipment		0.09	0.39	0.67	0.00	0.04	0.03
Worker Trips		0.00	0.04	0.00	0.00	0.18	0.02
Construction Trucks		0.00	0.02	0.05	0.00	0.30	0.04
Fugitive Dust						1.62	0.53
		0.09	0.44	0.72	0.00	2.13	0.62
<i>Guard Poles</i>							
Heavy Construction Equipment		0.00	0.01	0.02	0.00	0.00	0.00
Worker Trips		0.00	0.01	0.00	0.00	0.05	0.00
Construction Trucks		0.00	0.00	0.01	0.00	0.03	0.00
		0.00	0.02	0.03	0.00	0.08	0.01
<i>Foundations and Rebar Cages</i>							
Heavy Construction Equipment		0.10	0.55	0.89	0.00	0.04	0.03
Worker Trips		0.01	0.17	0.02	0.00	0.81	0.08
Construction Trucks		0.00	0.00	0.01	0.00	0.10	0.01
Fugitive Dust						0.00	0.00
		0.11	0.73	0.92	0.00	0.95	0.13
<i>Steel (Hauling, Shake-Out, Light Assembly, Heavy Assembly, Erection)</i>							
Heavy Construction Equipment		0.38	5.76	1.30	0.00	0.02	0.02
Worker Trips		0.03	0.54	0.05	0.00	2.56	0.26
Construction Trucks		0.00	0.10	0.03	0.00	0.64	0.07
		0.42	6.40	1.38	0.00	3.22	0.35
<i>Conductor (Sheaves, Insulators, Stringing, Clipping, Dampers, Deadending)</i>							
Heavy Construction Equipment		0.08	0.61	0.56	0.00	0.02	0.02
Worker Trips		0.01	0.17	0.02	0.00	0.82	0.08
Construction Trucks		0.00	0.10	0.14	0.00	0.59	0.06
Helicopter		0.03	0.06	0.12	0.00	0.01	0.01
		0.12	0.95	0.84	0.00	1.44	0.17
<i>Cleanup and Restoration</i>							
Heavy Construction Equipment		0.04	0.21	0.29	0.00	0.02	0.02
Worker Trips		0.00	0.03	0.00	0.00	0.15	0.02
Construction Trucks		0.00	0.00	0.00	0.00	0.11	0.01
		0.04	0.24	0.30	0.00	0.28	0.04
	Max Daily	0.84	9.33	4.52	0.01	9.71	1.51
Total Segment A - USFS							
D	Miles per Air District						
AVAQMD	13.20						
<i>Construction Inspection</i>							

Table A-24
Construction Emissions - Segment D
New 230 kV Transmission Line
Barren Ridge Renewable Transmission Project

		Emissions, tons/year					
		ROG tons (total)	CO tons (total)	NOX tons (total)	SOX tons (total)	PM10 tons (total)	PM2.5 tons (total)
Segment							
Worker Trips		0.00	0.08	0.01	0.00	0.38	0.04
Construction Trucks		0.00	0.07	0.01	0.00	0.38	0.04
		0.01	0.15	0.01	0.00	0.77	0.08
<i>Marshalling Yards</i>							
Heavy Construction Equipment		0.04	0.27	0.26	0.00	0.02	0.02
Worker Trips		0.00	0.08	0.01	0.00	0.38	0.04
Construction Trucks		0.01	0.05	0.06	0.00	0.42	0.05
		0.05	0.41	0.33	0.00	0.82	0.11
<i>Survey</i>							
Worker Trips		0.00	0.10	0.01	0.00	0.46	0.05
Construction Trucks		0.00	0.01	0.00	0.00	0.04	0.00
		0.01	0.10	0.01	0.00	0.49	0.05
<i>Road Work and Structure Pads</i>							
Heavy Construction Equipment		0.09	0.41	0.70	0.00	0.04	0.04
Worker Trips		0.00	0.04	0.00	0.00	0.19	0.02
Construction Trucks		0.00	0.02	0.06	0.00	0.31	0.04
Fugitive Dust						1.70	0.56
		0.10	0.47	0.76	0.00	2.24	0.65
<i>Guard Poles</i>							
Heavy Construction Equipment		0.00	0.01	0.03	0.00	0.00	0.00
Worker Trips		0.01	0.18	0.02	0.00	0.85	0.09
Construction Trucks		0.00	0.00	0.01	0.00	0.03	0.00
		0.01	0.19	0.05	0.00	0.89	0.09
<i>Foundations and Rebar Cages</i>							
Heavy Construction Equipment		0.11	0.58	0.94	0.00	0.04	0.03
Worker Trips		0.01	0.18	0.02	0.00	0.85	0.09
Construction Trucks		0.00	0.00	0.01	0.00	0.10	0.01
Fugitive Dust						0.00	0.00
		0.12	0.76	0.97	0.00	1.00	0.13
<i>Steel (Hauling, Shake-Out, Light Assembly, Heavy Assembly, Erection)</i>							
Heavy Construction Equipment		0.41	6.07	1.37	0.00	0.03	0.02
Worker Trips		0.03	0.57	0.06	0.00	2.69	0.27
Construction Trucks		0.00	0.10	0.03	0.00	0.67	0.07
		0.44	6.74	1.45	0.00	3.39	0.37
<i>Conductor (Sheaves, Insulators, Stringing, Clipping, Dampers, Deadending)</i>							
Heavy Construction Equipment		0.08	0.65	0.59	0.00	0.03	0.02
Worker Trips		0.01	0.18	0.02	0.00	0.87	0.09
Construction Trucks		0.00	0.11	0.15	0.00	0.62	0.07
Helicopter		0.03	0.06	0.13	0.00	0.01	0.00
		0.12	1.00	0.89	0.00	1.52	0.18
<i>Cleanup and Restoration</i>							
Heavy Construction Equipment		0.04	0.22	0.31	0.00	0.02	0.02
Worker Trips		0.00	0.03	0.00	0.00	0.16	0.02
Construction Trucks		0.00	0.00	0.00	0.00	0.11	0.01
		0.04	0.26	0.31	0.00	0.29	0.05
	Max Daily	0.90	10.08	4.79	0.01	11.42	1.71
Total Segment A - USFS							
D	Miles per Air District						
SCAQMD	22.27						
<i>Construction Inspection</i>							
Worker Trips		0.01	0.14	0.01	0.00	0.65	0.07
Construction Trucks		0.00	0.12	0.01	0.00	0.65	0.07
		0.01	0.26	0.02	0.00	1.30	0.13
<i>Marshalling Yards</i>							

940.62 |

Table A-24
Construction Emissions - Segment D
New 230 kV Transmission Line
Barren Ridge Renewable Transmission Project

		Emissions, tons/year					
		ROG tons (total)	CO tons (total)	NOX tons (total)	SOX tons (total)	PM10 tons (total)	PM2.5 tons (total)
Segment							
Heavy Construction Equipment		0.07	0.46	0.44	0.00	0.04	0.03
Worker Trips		0.01	0.14	0.01	0.00	0.65	0.07
Construction Trucks		0.01	0.09	0.10	0.00	0.71	0.08
		0.09	0.69	0.55	0.00	1.39	0.18
Survey							
Worker Trips		0.01	0.16	0.02	0.00	0.77	0.08
Construction Trucks		0.00	0.01	0.00	0.00	0.06	0.01
		0.01	0.17	0.02	0.00	0.83	0.08
Road Work and Structure Pads							
Heavy Construction Equipment		0.16	0.69	1.18	0.00	0.07	0.06
Worker Trips		0.00	0.07	0.01	0.00	0.32	0.03
Construction Trucks		0.01	0.03	0.09	0.00	0.53	0.06
Fugitive Dust						2.87	0.95
		0.17	0.79	1.29	0.00	3.79	1.10
Guard Poles							
Heavy Construction Equipment		0.00	0.01	0.04	0.00	0.00	0.00
Worker Trips		0.02	0.31	0.03	0.00	1.44	0.15
Construction Trucks		0.00	0.00	0.01	0.00	0.05	0.01
		0.02	0.32	0.09	0.00	1.49	0.15
Foundations and Rebar Cages							
Heavy Construction Equipment		0.18	0.98	1.59	0.00	0.07	0.06
Worker Trips		0.02	0.31	0.03	0.00	1.44	0.15
Construction Trucks		0.00	0.01	0.02	0.00	0.18	0.02
Fugitive Dust						0.00	0.00
		0.20	1.29	1.64	0.00	1.69	0.23
Steel (Hauling, Shake-Out, Light Assembly, Heavy Assembly, Erection)							
Heavy Construction Equipment		0.68	10.24	2.31	0.00	0.04	0.04
Worker Trips		0.05	0.96	0.09	0.00	4.54	0.46
Construction Trucks		0.01	0.17	0.05	0.00	1.13	0.12
		0.74	11.37	2.45	0.00	5.72	0.62
Conductor (Sheaves, Insulators, Stringing, Clipping, Dampers, Deadending)							
Heavy Construction Equipment		0.14	1.09	1.00	0.00	0.04	0.04
Worker Trips		0.02	0.31	0.03	0.00	1.46	0.15
Construction Trucks		0.01	0.18	0.25	0.00	1.05	0.11
Helicopter		0.05	0.10	0.21	0.00	0.01	0.01
		0.21	1.69	1.49	0.00	2.56	0.31
Cleanup and Restoration							
Heavy Construction Equipment		0.07	0.37	0.52	0.00	0.03	0.03
Worker Trips		0.00	0.06	0.01	0.00	0.27	0.03
Construction Trucks		0.00	0.00	0.01	0.00	0.19	0.02
		0.08	0.43	0.53	0.00	0.49	0.08
	Max Daily	1.51	17.01	8.08	0.02	19.26	2.89
Helicopter Emissions - Mitigation		6.66	26.95	29.29	0.24	1.62	1.60
Max Daily							
		8.17	43.96	37.38	0.26	20.88	4.49
Total Segment D - BLM	0	0.00	0.00	0.00	0.00	0.00	0.00
Total Segment D - USFS KCAPCD	0	0.00	0.00	0.00	0.00	0.00	0.00
Total Segment D - USFS AVAQMD	0	0.00	0.00	0.00	0.00	0.00	0.00
Total Segment D - USFS SCAQMD	15.91	5.84	31.41	26.70	0.19	14.92	3.21

Table A-28
Construction Emissions - Segment A
Reconductoring
Barren Ridge Renewable Transmission Project

Emissions Summary - Reconductoring

		Emissions, tons/year					
		ROG tons (total)	CO tons (total)	NOX tons (total)	SOX tons (total)	PM10 tons (total)	PM2.5 tons (total)
Segment							
A	Miles per Air District						
KCAPCD	13.25						
<i>Construction Inspection - 2014</i>							
Worker Trips		0.00	0.04	0.00	0.00	0.19	0.02
Construction Trucks		0.00	0.03	0.00	0.00	0.33	0.05
		0.00	0.07	0.01	0.00	0.52	0.07
<i>Marshalling Yards - 2014</i>							
Heavy Construction Equipment		0.02	0.14	0.12	0.00	0.01	0.01
Worker Trips		0.00	0.04	0.00	0.00	0.19	0.02
Construction Trucks		0.00	0.02	0.03	0.00	0.28	0.04
		0.02	0.20	0.15	0.00	0.48	0.07
<i>Survey - 2014</i>							
Worker Trips		0.00	0.00	0.00	0.00	0.02	0.00
Construction Trucks		0.00	0.00	0.00	0.00	0.02	0.00
		0.00	0.01	0.00	0.00	0.04	0.01
<i>Road Work and Structure Pads - 2014</i>							
Heavy Construction Equipment		0.01	0.07	0.10	0.00	0.01	0.01
Worker Trips		0.00	0.01	0.00	0.00	0.06	0.01
Construction Trucks		0.00	0.01	0.02	0.00	0.11	0.02
Fugitive Dust						1.51	0.52
		0.02	0.08	0.12	0.00	1.68	0.55
<i>Wreck Out - 2014</i>							
Heavy Construction Equipment		0.09	0.47	0.66	0.00	0.03	0.02
Worker Trips		0.01	0.15	0.01	0.00	0.76	0.08
Construction Trucks		0.01	0.05	0.09	0.00	0.87	0.12
Helicopter		2.08	6.06	8.13	0.07	0.45	0.44
		2.18	6.72	8.89	0.07	2.10	0.66
<i>Guard Poles - 2014</i>							
Heavy Construction Equipment		0.00	0.01	0.03	0.00	0.00	0.00
Worker Trips		0.00	0.01	0.00	0.00	0.04	0.00
Construction Trucks		0.00	0.00	0.01	0.00	0.10	0.01
		0.00	0.02	0.04	0.00	0.14	0.02
<i>Foundations and Rebar Cages - 2014</i>							
Heavy Construction Equipment		0.04	0.35	0.28	0.00	0.01	0.01
Worker Trips		0.00	0.06	0.01	0.00	0.29	0.03
Construction Trucks		0.00	0.02	0.06	0.00	0.56	0.08
Fugitive Dust						0.00	0.00
		0.04	0.42	0.35	0.00	0.86	0.12
<i>Steel (Hauling, Shake-Out, Light Assembly, Heavy Assembly, Erection) - 2014</i>							
Heavy Construction Equipment		0.16	2.44	0.54	0.00	0.01	0.01
Worker Trips		0.01	0.21	0.02	0.00	1.08	0.11
Construction Trucks		0.00	0.04	0.01	0.00	0.43	0.06
		0.17	2.68	0.57	0.00	1.52	0.18
<i>Conductor (Sheaves, Insulators, Stringing, Clipping, Dampers, Deadending) - 2014</i>							
Heavy Construction Equipment		0.03	0.11	0.24	0.00	0.01	0.01
Worker Trips		0.00	0.09	0.01	0.00	0.46	0.05
Construction Trucks		0.01	0.05	0.07	0.00	0.91	0.12
Helicopter Emissions		2.08	6.06	8.13	0.07	0.45	0.44
		2.12	6.32	8.44	0.07	1.83	0.62
<i>Cleanup and Restoration - 2014</i>							
Heavy Construction Equipment		0.02	0.10	0.13	0.00	0.01	0.01
Worker Trips		0.00	0.02	0.00	0.00	0.08	0.01
Construction Trucks		0.00	0.01	0.02	0.00	0.11	0.02
		0.02	0.12	0.15	0.00	0.20	0.03
Total Segment A - KCAPCD	Max Daily	4.58	16.65	18.72	0.14	9.39	2.31
Total Segment A - BLM	3.67	1.27	4.61	5.19	0.04	2.60	0.64
Total Segment A - USFS	0						

Table A-29
Construction Emissions - Segment B
Reconductoring
Barren Ridge Renewable Transmission Project

Emissions Summary - Reconductoring

		Emissions, tons/year					
		ROG tons (total)	CO tons (total)	NOX tons (total)	SOX tons (total)	PM10 tons (total)	PM2.5 tons (total)
Segment							
B	Miles per Air District						
KCAPCD	20.30						
<i>Construction Inspection - 2014</i>							
Worker Trips		0.00	0.06	0.01	0.00	0.30	0.03
Construction Trucks		0.00	0.05	0.00	0.00	0.50	0.07
		0.00	0.11	0.01	0.00	0.80	0.10
<i>Marshalling Yards - 2014</i>							
Heavy Construction Equipment		0.03	0.21	0.19	0.00	0.02	0.01
Worker Trips		0.00	0.06	0.01	0.00	0.30	0.03
Construction Trucks		0.00	0.04	0.04	0.00	0.43	0.06
		0.04	0.31	0.24	0.00	0.74	0.10
<i>Survey - 2014</i>							
Worker Trips		0.00	0.01	0.00	0.00	0.04	0.00
Construction Trucks		0.00	0.00	0.00	0.00	0.03	0.00
		0.00	0.01	0.00	0.00	0.06	0.01
<i>Road Work and Structure Pads - 2014</i>							
Heavy Construction Equipment		0.02	0.10	0.16	0.00	0.01	0.01
Worker Trips		0.00	0.02	0.00	0.00	0.09	0.01
Construction Trucks		0.00	0.01	0.02	0.00	0.17	0.02
Fugitive Dust						2.31	0.80
		0.02	0.12	0.18	0.00	2.58	0.84
<i>Wreck Out - 2014</i>							
Heavy Construction Equipment		0.13	0.71	1.01	0.00	0.04	0.04
Worker Trips		0.01	0.22	0.02	0.00	1.17	0.12
Construction Trucks		0.01	0.07	0.13	0.00	1.33	0.18
Helicopter		3.47	11.39	15.14	0.13	0.83	0.82
		3.62	12.39	16.31	0.13	3.37	1.16
<i>Guard Poles - 2014</i>							
Heavy Construction Equipment		0.01	0.02	0.05	0.00	0.00	0.00
Worker Trips		0.00	0.01	0.00	0.00	0.06	0.01
Construction Trucks		0.00	0.00	0.02	0.00	0.15	0.02
		0.01	0.04	0.07	0.00	0.21	0.03
<i>Foundations and Rebar Cages - 2014</i>							
Heavy Construction Equipment		0.06	0.53	0.44	0.00	0.02	0.02
Worker Trips		0.00	0.08	0.01	0.00	0.44	0.04
Construction Trucks		0.00	0.03	0.09	0.00	0.86	0.12
Fugitive Dust						0.00	0.00
		0.07	0.65	0.53	0.00	1.32	0.18
<i>Steel (Hauling, Shake-Out, Light Assembly, Heavy Assembly, Erection) - 2014</i>							
Heavy Construction Equipment		0.25	3.73	0.83	0.00	0.01	0.01
Worker Trips		0.02	0.32	0.03	0.00	1.66	0.17
Construction Trucks		0.00	0.06	0.02	0.00	0.66	0.09
		0.27	4.11	0.87	0.00	2.33	0.28
<i>Conductor (Sheaves, Insulators, Stringing, Clipping, Dampers, Deadending) - 2014</i>							
Heavy Construction Equipment		0.04	0.17	0.36	0.00	0.01	0.01
Worker Trips		0.01	0.14	0.01	0.00	0.71	0.07
Construction Trucks		0.01	0.08	0.11	0.00	1.40	0.19
Helicopter Emissions		3.47	11.39	15.14	0.13	0.83	0.82

Table A-29
Construction Emissions - Segment B
Reconductoring
Barren Ridge Renewable Transmission Project

		Emissions, tons/year					
		ROG tons (total)	CO tons (total)	NOX tons (total)	SOX tons (total)	PM10 tons (total)	PM2.5 tons (total)
Segment							
		3.53	11.77	15.63	0.13	2.95	1.10
<i>Cleanup and Restoration - 2014</i>							
Heavy Construction Equipment		0.03	0.16	0.20	0.00	0.01	0.01
Worker Trips		0.00	0.02	0.00	0.00	0.12	0.01
Construction Trucks		0.00	0.01	0.02	0.00	0.17	0.02
		0.03	0.19	0.23	0.00	0.31	0.05
Total Segment B - KCAPCD	Max Daily	7.59	29.70	34.07	0.26	14.68	3.83
B	Miles per Air District						
AVAQMD	6.20						
<i>Construction Inspection - 2014</i>							
Worker Trips		0.00	0.06	0.01	0.00	0.30	0.03
Construction Trucks		0.00	0.05	0.00	0.00	0.50	0.07
		0.00	0.11	0.01	0.00	0.80	0.10
<i>Marshalling Yards - 2014</i>							
Heavy Construction Equipment		0.03	0.21	0.19	0.00	0.02	0.01
Worker Trips		0.00	0.06	0.01	0.00	0.30	0.03
Construction Trucks		0.00	0.04	0.04	0.00	0.43	0.06
		0.04	0.31	0.24	0.00	0.74	0.10
<i>Survey - 2014</i>							
Worker Trips		0.00	0.01	0.00	0.00	0.04	0.00
Construction Trucks		0.00	0.00	0.00	0.00	0.03	0.00
		0.00	0.01	0.00	0.00	0.06	0.01
<i>Road Work and Structure Pads - 2014</i>							
Heavy Construction Equipment		0.02	0.10	0.16	0.00	0.01	0.01
Worker Trips		0.00	0.02	0.00	0.00	0.09	0.01
Construction Trucks		0.00	0.01	0.02	0.00	0.17	0.02
Fugitive Dust						0.70	0.24
		0.02	0.12	0.18	0.00	0.98	0.28
<i>Wreck Out - 2014</i>							
Heavy Construction Equipment		0.13	0.71	1.01	0.00	0.04	0.04
Worker Trips		0.01	0.22	0.02	0.00	1.17	0.12
Construction Trucks		0.01	0.07	0.13	0.00	1.33	0.18
Helicopter		1.12	3.71	4.94	0.04	0.27	0.27
		0.15	1.01	1.17	0.00	2.54	0.33
<i>Guard Poles - 2014</i>							
Heavy Construction Equipment		0.01	0.02	0.05	0.00	0.00	0.00
Worker Trips		0.00	0.01	0.00	0.00	0.06	0.01
Construction Trucks		0.00	0.00	0.02	0.00	0.15	0.02
		0.01	0.04	0.07	0.00	0.21	0.03
<i>Foundations and Rebar Cages - 2014</i>							
Heavy Construction Equipment		0.06	0.53	0.44	0.00	0.02	0.02
Worker Trips		0.00	0.08	0.01	0.00	0.44	0.04
Construction Trucks		0.00	0.03	0.09	0.00	0.86	0.12
Fugitive Dust						0.00	0.00
		0.07	0.65	0.53	0.00	1.32	0.18
<i>Steel (Hauling, Shake-Out, Light Assembly, Heavy Assembly, Erection) - 2014</i>							
Heavy Construction Equipment		0.25	3.73	0.83	0.00	0.01	0.01
Worker Trips		0.02	0.32	0.03	0.00	1.66	0.17

Table A-29
Construction Emissions - Segment B
Reconductoring
Barren Ridge Renewable Transmission Project

		Emissions, tons/year					
		ROG tons (total)	CO tons (total)	NOX tons (total)	SOX tons (total)	PM10 tons (total)	PM2.5 tons (total)
Segment							
Construction Trucks		0.00	0.06	0.02	0.00	0.66	0.09
		0.27	4.11	0.87	0.00	2.33	0.28
<i>Conductor (Sheaves, Insulators, Stringing, Clipping, Dampers, Deadending) - 2014</i>							
Heavy Construction Equipment		0.04	0.17	0.36	0.00	0.01	0.01
Worker Trips		0.01	0.14	0.01	0.00	0.71	0.07
Construction Trucks		0.01	0.08	0.11	0.00	1.40	0.19
Helicopter Emissions		1.12	3.71	4.94	0.04	0.27	0.27
		1.18	4.10	5.42	0.04	2.39	0.54
<i>Cleanup and Restoration - 2014</i>							
Heavy Construction Equipment		0.03	0.16	0.20	0.00	0.01	0.01
Worker Trips		0.00	0.02	0.00	0.00	0.12	0.01
Construction Trucks		0.00	0.01	0.02	0.00	0.17	0.02
		0.03	0.19	0.23	0.00	0.31	0.05
Total Segment B - AVAQMD	Max Daily	1.77	10.64	8.72	0.05	11.68	1.90
Total Segment B - BLM	0	0.00	0.00	0.00	0.00	0.00	0.00
Total Segment B - USFS	0	0.00	0.00	0.00	0.00	0.00	0.00

Table A-30
Construction Emissions - Segment G
Reconductoring
Barren Ridge Renewable Transmission Project

Emissions Summary - Reconductoring

		Emissions, tons/year					
		ROG tons (total)	CO tons (total)	NOX tons (total)	SOX tons (total)	PM10 tons (total)	PM2.5 tons (total)
Segment							
G	Miles per Air District						
AVAQMD	6.20						
<i>Construction Inspection - 2014</i>							
Worker Trips		0.00	0.02	0.00	0.00	0.09	0.01
Construction Trucks		0.00	0.02	0.00	0.00	0.15	0.02
		0.00	0.03	0.00	0.00	0.25	0.03
<i>Marshalling Yards - 2014</i>							
Heavy Construction Equipment		0.01	0.06	0.06	0.00	0.00	0.00
Worker Trips		0.00	0.02	0.00	0.00	0.09	0.01
Construction Trucks		0.00	0.01	0.01	0.00	0.13	0.02
		0.01	0.09	0.07	0.00	0.23	0.03
<i>Survey - 2014</i>							
Worker Trips		0.00	0.00	0.00	0.00	0.01	0.00
Construction Trucks		0.00	0.00	0.00	0.00	0.01	0.00
		0.00	0.00	0.00	0.00	0.02	0.00
<i>Road Work and Structure Pads - 2014</i>							
Heavy Construction Equipment		0.01	0.03	0.05	0.00	0.00	0.00
Worker Trips		0.00	0.01	0.00	0.00	0.03	0.00
Construction Trucks		0.00	0.00	0.01	0.00	0.05	0.01
Fugitive Dust						0.82	0.27
		0.01	0.04	0.06	0.00	0.91	0.28
<i>Wreck Out - 2014</i>							
Heavy Construction Equipment		0.04	0.22	0.31	0.00	0.01	0.01
Worker Trips		0.00	0.07	0.01	0.00	0.36	0.04
Construction Trucks		0.00	0.02	0.04	0.00	0.41	0.05
Helicopter		1.12	3.71	4.94	0.04	0.27	0.27
		1.17	4.02	5.30	0.04	1.05	0.37
<i>Guard Poles - 2014</i>							
Heavy Construction Equipment		0.00	0.01	0.01	0.00	0.00	0.00
Worker Trips		0.00	0.00	0.00	0.00	0.02	0.00
Construction Trucks		0.00	0.00	0.01	0.00	0.05	0.01
		0.00	0.01	0.02	0.00	0.07	0.01
<i>Foundations and Rebar Cages - 2014</i>							
Heavy Construction Equipment		0.02	0.16	0.13	0.00	0.01	0.00
Worker Trips		0.00	0.03	0.00	0.00	0.13	0.01
Construction Trucks		0.00	0.01	0.03	0.00	0.26	0.04
Fugitive Dust						0.00	0.00
		0.02	0.20	0.16	0.00	0.40	0.05
<i>Steel (Hauling, Shake-Out, Light Assembly, Heavy Assembly, Erection) - 2014</i>							
Heavy Construction Equipment		0.08	1.14	0.25	0.00	0.00	0.00
Worker Trips		0.00	0.10	0.01	0.00	0.51	0.05
Construction Trucks		0.00	0.02	0.01	0.00	0.20	0.03
		0.08	1.25	0.27	0.00	0.71	0.08
<i>Conductor (Sheaves, Insulators, Stringing, Clipping, Dampers, Deadending) - 2014</i>							
Heavy Construction Equipment		0.01	0.05	0.11	0.00	0.00	0.00
Worker Trips		0.00	0.04	0.00	0.00	0.22	0.02
Construction Trucks		0.00	0.03	0.03	0.00	0.43	0.06
Helicopter Emissions		1.12	3.71	4.94	0.04	0.27	0.27

Table A-30
Construction Emissions - Segment G
Reconductoring
Barren Ridge Renewable Transmission Project

		Emissions, tons/year					
		ROG tons (total)	CO tons (total)	NOX tons (total)	SOX tons (total)	PM10 tons (total)	PM2.5 tons (total)
Segment							
		1.14	3.83	5.09	0.04	0.92	0.35
<i>Cleanup and Restoration - 2014</i>							
Heavy Construction Equipment		0.01	0.05	0.06	0.00	0.00	0.00
Worker Trips		0.00	0.01	0.00	0.00	0.04	0.00
Construction Trucks		0.00	0.00	0.01	0.00	0.05	0.01
		0.01	0.06	0.07	0.00	0.09	0.01
Total Segment G - AVAQMD	Max Daily	2.45	9.53	11.03	0.08	4.64	1.23
G	Miles per Air District						
SCAQMD	14.60						
<i>Construction Inspection - 2014</i>							
Worker Trips		0.00	0.02	0.00	0.00	0.09	0.01
Construction Trucks		0.00	0.02	0.00	0.00	0.15	0.02
		0.00	0.03	0.00	0.00	0.25	0.03
<i>Marshalling Yards - 2014</i>							
Heavy Construction Equipment		0.01	0.06	0.06	0.00	0.00	0.00
Worker Trips		0.00	0.02	0.00	0.00	0.09	0.01
Construction Trucks		0.00	0.01	0.01	0.00	0.13	0.02
		0.01	0.09	0.07	0.00	0.23	0.03
<i>Survey - 2014</i>							
Worker Trips		0.00	0.00	0.00	0.00	0.01	0.00
Construction Trucks		0.00	0.00	0.00	0.00	0.01	0.00
		0.00	0.00	0.00	0.00	0.02	0.00
<i>Road Work and Structure Pads - 2014</i>							
Heavy Construction Equipment		0.01	0.03	0.05	0.00	0.00	0.00
Worker Trips		0.00	0.01	0.00	0.00	0.03	0.00
Construction Trucks		0.00	0.00	0.01	0.00	0.05	0.01
Fugitive Dust						1.94	0.63
		0.01	0.04	0.06	0.00	2.02	0.65
<i>Wreck Out - 2014</i>							
Heavy Construction Equipment		0.04	0.22	0.31	0.00	0.01	0.01
Worker Trips		0.00	0.07	0.01	0.00	0.36	0.04
Construction Trucks		0.00	0.02	0.04	0.00	0.41	0.05
Helicopter		2.51	8.25	10.98	0.09	0.60	0.60
		2.56	8.56	11.33	0.09	1.38	0.70
<i>Guard Poles - 2014</i>							
Heavy Construction Equipment		0.00	0.01	0.01	0.00	0.00	0.00
Worker Trips		0.00	0.00	0.00	0.00	0.02	0.00
Construction Trucks		0.00	0.00	0.01	0.00	0.05	0.01
		0.00	0.01	0.02	0.00	0.07	0.01
<i>Foundations and Rebar Cages - 2014</i>							
Heavy Construction Equipment		0.02	0.16	0.13	0.00	0.01	0.00
Worker Trips		0.00	0.03	0.00	0.00	0.13	0.01
Construction Trucks		0.00	0.01	0.03	0.00	0.26	0.04
Fugitive Dust						0.00	0.00
		0.02	0.20	0.16	0.00	0.40	0.05
<i>Steel (Hauling, Shake-Out, Light Assembly, Heavy Assembly, Erection) - 2014</i>							
Heavy Construction Equipment		0.08	1.14	0.25	0.00	0.00	0.00
Worker Trips		0.00	0.10	0.01	0.00	0.51	0.05

Table A-30
Construction Emissions - Segment G
Reconductoring
Barren Ridge Renewable Transmission Project

		Emissions, tons/year					
		ROG tons (total)	CO tons (total)	NOX tons (total)	SOX tons (total)	PM10 tons (total)	PM2.5 tons (total)
Segment							
Construction Trucks		0.00	0.02	0.01	0.00	0.20	0.03
		0.08	1.25	0.27	0.00	0.71	0.08
<i>Conductor (Sheaves, Insulators, Stringing, Clipping, Dampers, Deadending) - 2014</i>							
Heavy Construction Equipment		0.01	0.05	0.11	0.00	0.00	0.00
Worker Trips		0.00	0.04	0.00	0.00	0.22	0.02
Construction Trucks		0.00	0.03	0.03	0.00	0.43	0.06
Helicopter Emissions		2.51	8.25	10.98	0.09	0.60	0.60
		2.53	8.37	11.12	0.09	1.25	0.68
<i>Cleanup and Restoration - 2014</i>							
Heavy Construction Equipment		0.01	0.05	0.06	0.00	0.00	0.00
Worker Trips		0.00	0.01	0.00	0.00	0.04	0.00
Construction Trucks		0.00	0.00	0.01	0.00	0.05	0.01
		0.01	0.06	0.07	0.00	0.09	0.01
Total Segment G - SCAQMD	Max Daily	5.22	18.62	23.11	0.19	6.42	2.25
Total Segment G - BLM	0	0.00	0.00	0.00	0.00	0.00	0.00
Total Segment G - USFS AVAQMD	2.2	0.87	3.38	3.92	0.03	1.65	0.44
Total Segment G - USFS SCAQMD	12.99	4.65	16.56	20.56	0.16	5.71	2.00

APPENDIX O: DRAFT PROGRAMMATIC AGREEMENT

DRAFT

**PROGRAMMATIC AGREEMENT
AMONG
THE U.S. DEPARTMENT OF AGRICULTURE FOREST SERVICE –
ANGELES NATIONAL FOREST,
THE U.S. DEPARTMENT OF THE INTERIOR BUREAU OF LAND
MANAGEMENT
THE CALIFORNIA STATE HISTORIC PRESERVATION OFFICER, AND
THE LOS ANGELES DEPARTMENT OF WATER AND POWER
REGARDING
THE BARREN RIDGE RENEWABLE TRANSMISSION PROJECT,
LOS ANGELES AND KERN COUNTIES, CALIFORNIA**

WHEREAS, the Los Angeles Department of Water and Power's (LADWP) Barren Ridge Renewable Transmission Project (hereinafter, "BRRTP" or "Project") proposes: 1) constructing a new 230 kilovolt (kV) transmission line between the existing Barren Ridge Switching Station north of the city of Mojave southward to a proposed new switching station in Haskell Canyon north of Santa Clarita; 2) placing the new transmission line onto vacant positions on existing structures from Bee Canyon to Haskell Canyon; 3) installing a 230kV circuit onto existing towers between the proposed Haskell Switching Station and the existing Castaic Power Plant; 3) re-conductoring the existing Barren Ridge – Rinaldi (BR-RIN) 230kV Transmission Line from the Barren Ridge Switching Station to the Rinaldi Substation in the San Fernando Valley; 5) constructing the new Haskell Switching Station on LADWP-owned property in Haskell Canyon; and 6) expanding the existing Barren Ridge Switching Station north of Mojave (Figure 1); and

WHEREAS, the U.S. Department of Agriculture Forest Service, Angeles National Forest (ANF) and the U.S. Department of the Interior Bureau of Land Management (BLM) have determined that issuing permits or granting rights-of-way (ROW) for BRRTP and the demolition, construction, operation and maintenance activities for BRRTP on ANF and BLM-administered lands and on other lands constitute an "Undertaking" as defined at 36 CFR § 800.16(y); and

WHEREAS, the ANF may issue Temporary Special Use Permits (TSUP) for BRRTP-related construction activities as well as a 50-year term Special Use Permit (SUP) or ROW for the selected BRRTP alternative on ANF administered lands, pursuant to the Federal Land Policy and Management Act (FLPMA) (P.L. 94-579) of 1976, as amended, which authorizes the Forest Service to permit the occupancy, use, or traversing of National Forest lands for generation, transmission, and distribution of electrical power; and

WHEREAS, the BLM may issue a ROW Grant, pursuant to Title V of FLPMA (43 USC 1761-1771), for electrical power generation, transmission and distribution systems, systems for the transmission and reception of electronic signals and other means of communications, highways, railroads, pipelines (other than oil and gas pipelines) and other facilities or systems which are in the public interest; and

47 **Figure 1. Proposed Action**



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51
52 **WHEREAS**, in regards to the Undertaking, the ANF and BLM manage historic properties and
53 cultural resources on public land according to the National Historic Preservation Act (NHPA)
54 (P.L. 89-665, as amended), Archaeological Resources Protection Act (ARPA) (P.L. 96-95, as
55 amended), National Environmental Policy Act (NEPA) (P.L. 91-190, as amended), FLPMA (P.L.
56 94-579), American Indian Religious Freedom Act (AIRFA) (P.L. 95-341, as amended), Native
57 American Graves Protection and Repatriation Act (NAGPRA) (P.L. 101-601), applicable
58 regulations (e.g., 36 CFR §§ 60, 63, 296, and 800 and 43 CFR § 10), and applicable Executive
59 Orders (e.g., 13007, 13175, and 13287), and these have been considered during consultation for
60 this Programmatic Agreement (PA); and
61

62 **WHEREAS**, the ANF has consulted with the California State Historic Preservation Officer
63 (SHPO) pursuant to 36 CFR § 800.3(c)(3), about this Undertaking; and
64

65 **WHEREAS**, the ANF has notified and invited the Advisory Council on Historic Preservation
66 (Council) per 36 CFR § 800.6(a)(1)(i)(C) to participate in the consultation to resolve the potential
67 effects of the Undertaking on historic properties and, per their letter dated September 23, 2009,
68 the Council has elected not to participate in this PA; and
69

70 **WHEREAS**, per 36 CFR § 800.2(a)(2) the ANF is the lead federal agency for the entire
71 Undertaking, including those components of BR RTP on non-federal land, for the purpose of
72 complying with Section 106 of the NHPA and its implementing regulations at 36 CFR § 800, and
73 the ANF and BLM shall each be responsible for managing historic properties within the Area of
74 Potential Effects (APE) for the Undertaking pursuant to the NHPA under the areas of their
75 individual jurisdictions; and
76

77 **WHEREAS**, LADWP shall consult with the ANF as the lead federal agency for Section 106
78 regarding the management of archaeological and historical resources outside of the boundaries of
79 ANF and BLM-administered lands; and
80

81 **WHEREAS**, the ANF and BLM, in consultation with the SHPO, have determined that a phased
82 approach for compliance with Section 106 of the NHPA is appropriate for the Undertaking
83 because all effects of the Undertaking on historic properties cannot be known prior to approval of
84 the Project (36 CFR § 800.14(b)(1)(ii)); there is the potential to encounter unanticipated historic
85 properties during the life of the Project (36 CFR § 800.13(a)(1)); and the completion of the
86 identification of historic properties, determinations of specific effects on historic properties, and
87 consultation concerning measures to avoid, minimize, or mitigate any adverse effects shall be
88 carried out as part of planning for and prior to implementing any specific Project activities that
89 have the potential to cause adverse effects on historic properties; and
90

91 **WHEREAS**, LADWP, a municipal utility and department of the City of Los Angeles, is the lead
92 agency for compliance with the California Environmental Quality Act (CEQA) (California Public
93 Resources Code (PRC), Division 13, Sections 21000-21177, as amended) and has certain
94 responsibilities under state laws and regulations to take into account and mitigate the effects of
95 this Project on historical resources eligible for or listed on the California Register of Historical
96 Resources (California Register) and is coordinating compliance with state law with federal
97 agency responsibilities to comply with Section 106 of the NHPA; and
98

99 **WHEREAS**, LADWP shall have responsibility for carrying out specific terms of this PA and is
100 an Invited Signatory to this PA; and
101

102 **WHEREAS**, the ANF and BLM have consulted (per 36 CFR § 800.3(f)(2); 36 CFR §
103 800.14(b)(2); and 36 CFR § 800.14(f)) federally-recognized Tribes (i.e., San Manuel Band of
104 Mission Indians, Morongo Band of Mission Indians, The Santa Ynez Band of Mission
105 Indians/Tribal Elders Council); and groups and individuals specifically identified by the
106 California National American Heritage Commission (NAHC) as having cultural affiliation with
107 the BRRTP area and expressing an interest in the Undertaking and have invited them to
108 participate as Concurring Parties to this PA, with the understanding that, notwithstanding any
109 decision by these Parties to decline to participate as Concurring Parties, the ANF and BLM shall
110 continue to consult with them throughout the implementation of the PA (per 36 CFR §
111 800.2(c)(5)); and
112

113 **WHEREAS**, in accordance with 36 CFR 800.2 § (c)(5) and 36 CFR § 800.14(b)(2)(ii), the ANF
114 and BLM have consulted with non-federally recognized tribal groups (i.e., Gabrieliño Group,
115 Seven Feathers Corp/San Fernando Band of Mission Indians, Owl Clan Consultants); groups and
116 individuals identified by the NAHC as having cultural affiliation with the BRRTP area, other
117 tribal groups and individuals known by the ANF as potentially interested parties; and have invited
118 those expressing an interest in the Undertaking to participate as Consulting Parties in the
119 development of the PA; and
120

121 **WHEREAS**, the Angeles National Forest (ANF) and the Bureau of Land Management (BLM)
122 intend to use this Programmatic Agreement (PA) to comply with Section 106 of the National
123 Historic Preservation Act (NHPA)(P.L. 89-665, as amended; 16 U.S.C. 470f) of the same Act
124 (16 U.S.C. 470h-2[f]) and have agreed to participate in the Section 106 consultation regarding the
125 Undertaking under the terms of this Programmatic Agreement and are Signatories to this PA.
126

127 **NOW, THEREFORE**, the ANF, BLM, and SHPO (hereinafter “Signatories”) and LADWP
128 (hereafter “Invited Signatory”) agree that the federal agencies, to the extent of their legal
129 authority, shall administer the Undertaking in accordance with the following stipulations to
130 satisfy the federal agencies’ Section 106 responsibilities for this Undertaking.
131
132

133 **STIPULATIONS**

134
135 The ANF and BLM shall ensure that the following measures are implemented.
136

137 **I. DEFINITIONS**

138
139 The definitions found at 36 CFR § 800.16 apply throughout this PA except where another
140 definition is offered in this PA.
141

142 (A) **Area of Potential Effects (APE)**. A single APE (36 CFR § 800.16(d)) is defined as
143 consisting of the following components:

- 144 (1) Prior to and during construction of the BRRTP, the APE within ANF and BLM-
145 administered lands shall include all areas in which:
- 146 (a) Historic properties could sustain direct effects as a result of the Undertaking and is
147 defined to include:
 - 148 (i) The selected alternative for BRRTP identified in the *USDA Forest Service,*
149 *USDI Bureau of Land Management, and Los Angeles Department of Water*
150 *and Power Barren Ridge Renewable Transmission Project Draft*
151 *Environmental Impact Statement/Environmental Impact Report (EIS/EIR).*

- 152 This would include the proposed 2.7-acre expansion area for the existing
153 Barren Ridge Switching Station north of Mojave; the 5.5-acre site of the
154 proposed Haskell Switching Station in Haskell Canyon north of Santa
155 Clarita; an approximately 61.5-mile 200-foot wide corridor south from the
156 Barren Ridge Switching Station to the proposed Haskell Switching Station;
157 approximately 12 miles of existing corridor between the new Haskell
158 Switching Station and the existing Castaic Power Plant; and approximately
159 75 miles of the existing Barren Ridge-Rinaldi (BR-RIN) corridor from the
160 Barren Ridge Switching Station to the Rinaldi Substation in the San
161 Fernando Valley (see attached Figure 1 and the Construction Phase
162 Management Plan [CPMP] in Appendix A [TO BE DEVELOPED]).
- 163 (ii) Any ancillary Project use areas or facility locations that are outside these
164 corridors and permitted by the ANF or BLM, including but not limited to,
165 marshalling yards, access and spur roads, helicopter fly yards/support areas,
166 helicopter landing zones, construction turn-arounds/pull outs, guard pole
167 locations, and splicing/pulling set-up areas. A 50-foot wide buffer shall
168 extend beyond either side of the center line of any access road or other linear
169 facility. A 100-foot wide buffer shall extend beyond the proposed boundary
170 of any marshalling yard, splicing/pulling set-up areas, or other areas similarly
171 used for the Project.
- 172 (iii) If a historic property extends outside the APE as defined elsewhere in
173 Stipulation I(A)(1)(a), the APE in that location shall be redefined to include
174 the boundaries of the entire historic property.
- 175 (b) Any area within which historic properties could sustain indirect effects, i.e.,
176 effects resulting from the Undertaking that are separated in space or time from the
177 Undertaking. This area would include:
- 178 (i) For visual effects, land within 3.0 miles of the proposed transmission line,
179 based on information provided in the Visual Resources sections of the Draft
180 EIR/EIS;
- 181 (ii) For this Undertaking, the APE does not include areas of potential
182 atmospheric and auditory effects because such effects would be temporary,
183 occurring over about 6 months, and would not be significant, as determined
184 in the Draft EIR/EIS.
- 185 (2) Prior to and during construction of the BR RTP, the APE for the selected alternative
186 outside the boundaries of ANF and BLM-administered lands shall include the
187 following areas:
- 188 (a) All areas of the Undertaking in which historic properties could sustain direct
189 effects, defined to include continuous corridors for each linear segment, each a
190 total of 200 feet wide (see Figure 1 and the CPMP in Appendix A [TO BE
191 DEVELOPED]).
- 192 (b) Any ancillary Project use areas or facility locations that are outside these 200-foot
193 wide corridors, including, but not limited to, marshalling yards, access and spur
194 roads, helicopter fly yards/support areas, helicopter landing zones, construction
195 turn-arounds/pull outs, guard pole locations, and splicing/pulling set-up areas. A
196 50-foot wide buffer shall extend beyond either side of the center line of any access
197 road or other linear facility. A 100-foot wide buffer shall extend beyond the
198 proposed boundary of any marshalling yard, splicing/pulling set-up areas, or other
199 areas similarly used for the Project.
- 200 (c) Any areas within which historic properties could sustain indirect effects as a result
201 of the Undertaking (See Stipulation I(A)(1)(b)).

- (3) Prior to and during construction, the APE for switching stations (i.e., expansion of the Barren Ridge Switching Station, the proposed Haskell Switching Station) shall be:
- (a) The total area of any ground disturbance required for each switching station plus a 100-foot buffer around the area of disturbance; and
 - (b) Any areas within which historic properties could sustain indirect effects as a result of the Undertaking (see Stipulation I(A)(1)(b)).
- (4) Following construction and for purposes of operation and maintenance activities as may be required, the APE for the BRRTP alignment shall be the width of any ROW or easement granted to LADWP by the ANF, BLM or any other party and as memorialized in legally binding agreements among the relevant parties. The APE for switching stations shall be the area of each switching station defined in any easement, deed or other legal definition for the switching station parcel.
- (B) **Concurring Party.** A party who signs this Agreement, but is not legally or financially responsible for completion of stipulations. Concurring Parties may volunteer to assist with implementation of stipulations and may propose amendments to the PA; however, Concurring Parties cannot terminate the Agreement. Amendments proposed by Concurring Parties may be considered at the discretion of the Signatories.
- (C) **Consulting Party.** Certain individuals and organizations with a demonstrated interest in the Undertaking may participate as Consulting Parties due to the nature of their legal or economic relations to the Undertaking or affected properties, or their concern with the Undertaking's effects on historic properties (per 36 CFR 800.2 § (c)(5)).
- (D) **Cultural Resource.** A cultural resource is an object or place of human activity, occupation, or use identifiable through field inventory, historical documentation, or oral evidence. Cultural resources are prehistoric, historic, archaeological, or architectural sites, structures, buildings, places, or objects and places of traditional cultural or religious importance to specified social or culture groups. Cultural resources include the entire spectrum of resources, from artifacts to cultural landscapes, without regard to eligibility for listing in the National Register of Historic Places (National Register).
- (E) **Historic Property.** Any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register maintained by the Secretary of the Interior and per the eligibility criteria at 36 CFR § 60.4. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural significance to an Indian Tribe that meet the National Register criteria. The term *eligible for inclusion in the National Register* includes both properties formally determined as such in accordance with regulations of the Secretary of the Interior and all other properties that meet the National Register criteria.
- (F) **Indian Tribe.** An Indian Tribe, band, nation, or other organized group of community . . . which is recognized as eligible for the special programs and services provided by the United States to Indians because of their status as Indians (36 CFR § 800.16(m)).
- (G) **Invited Signatory.** A party invited by the agency official to be a Signatory to this Agreement. Any such party that signs the Agreement shall have the same rights with regard to seeking amendment or termination as the other Signatories. The Invited Signatory for this Agreement is LADWP.

- (H) ***Lands Administered by the ANF*** means any federal lands under the administrative authority of the U.S. Department of Agriculture Forest Service, Angeles National Forest (ANF).
- (I) ***Lands Administered by the BLM*** means any federal lands under the administrative authority of the Department of the Interior Bureau of Land Management, Ridgecrest Field Office (BLM).
- (J) ***Management of Cultural Resources and Historic Properties***. The term “management” refers to any historic preservation activity undertaken by any Signatory or Invited Signatory to this PA, including archaeological, historical, ethnographic and other research to identify cultural resources and historic properties; efforts to evaluate and determine the historical significance of any cultural resource and its eligibility for listing in the National Register; efforts to determine the Undertaking’s effects on historic properties; designing and implementing measures for the preservation or protection of cultural resources; consultation among the parties to this PA and the public; designing and implementing mitigation measures for unavoidable adverse effects on historic properties; preparation of reports and other documentation of historic preservation efforts; public education; preparation for, and curation of, artifacts, reports, notes, digital data, and other related materials (e.g., per 36 CFR § 79); and any other activity required per this PA or applicable historic preservation law.
- (K) ***Signatory***. Signatories are those agencies required by statute to be parties to this Agreement and who, along with the Invited Signatory, have sole authority to execute, amend, or terminate the Agreement. Signatories to this PA are the ANF, BLM and SHPO.
- (L) ***Undertaking***. Issuing a permit or granting a ROW individually or collectively by the ANF and BLM and the demolition, construction, operation or maintenance activities for BRRTP on ANF or BLM-administered lands or on other lands constitute an “Undertaking” as defined at 36 CFR § 800.16(y) and is the Undertaking addressed by this PA.

II. COORDINATION OF THIS PROGRAMMATIC AGREEMENT WITH THE ENVIRONMENTAL IMPACT STATEMENT/ ENVIRONMENTAL IMPACT REPORT FOR BRRTP

Compliance with NEPA and with Section 106 of the NHPA can be parallel processes, and the ACHP (36 CFR § 800.8) encourages federal agencies to coordinate compliance with Section 106 and the requirements of NEPA. Impacts to cultural resource are identified in the *BRRTP draft EIS/EIR* (2011) and in the confidential appendix to the EIS/EIR entitled *Cultural Resource Technical Report and Class I and Class II Inventory Report* (2010). Mitigation measures identified in the two documents were not resource-specific; rather the documents explained that this PA was being prepared and would set forth procedures for identifying, evaluating, and managing cultural resources along the selected alternative. Resource-specific mitigation measures will be identified and implemented as appropriate following completion of the Class III intensive inventory.

Upon the issuance of a NEPA Record of Decision (ROD) and a Notice of Determination (CEQA), the Signatories and Invited Signatory shall commit to implementation of the procedures contained herein for compliance with Section 106 responsibilities for the BRRTP undertaking. Execution of this PA does not imply commitment by any party to a definite decision regarding the undertaking prior to completion of the NEPA/CEQA Decision/Determination.

A draft of this PA shall be circulated for public comment. The ANF, BLM, SHPO and LADWP will take into consideration applicable public comments, if any, received regarding the draft PA in preparing the final PA. Additionally, ANF will invite federally recognized Tribes, non-federally recognized Tribes, and other parties to provide comments regarding the draft PA and will consult with the other Signatories and the Invited Signatory to take into consideration applicable comments received from the Tribes and other parties in preparing the final PA.

III. MANAGEMENT OF CULTURAL RESOURCES IN THE APE

(A) When managing cultural resources and historic properties per this PA, the CPMP required in Stipulation IV, or the Historic Properties Management Plan (HPMP) required in Stipulation V, LADWP shall conform to the protocol described below.

(B) All lands potentially subject to ground disturbance within the BRRTP APE (as defined in Stipulation I(A)), including those components of the Undertaking whose locations are not yet determined, shall be intensively surveyed for cultural resources except in those cases in which the ANF and BLM agree that intensive survey is not feasible. Non-intensive survey methods will be utilized where conditions prohibit intensive survey methods. Specific survey procedures are outlined in the CPMP (Appendix A [TO BE DEVELOPED]).

(C) All newly identified and previously recorded cultural resources within the APE that may be affected (36 CFR § 800.5) shall be evaluated for eligibility to the National Register using the criteria at 36 CFR § 60.

(1) LADWP shall submit to the ANF and BLM in writing its assessment regarding National Register eligibility for each resource within the APE and will identify the National Register criteria under which the affected characteristics of each resource are assumed to be historically significant. The ANF and BLM will respond to LADWP within 30 days to agree or disagree with LADWP's recommendations. ANF shall provide Signatories an opportunity to respond to the recommendations. The ANF will forward the agencies' recommendations of eligibility to the SHPO for a formal determination of eligibility. The complete record of consultation among the ANF, BLM, SHPO, LADWP and other parties shall be provided to all the Signatories of this PA by ANF within 30 days following any SHPO concurrence or determination of eligibility.

(2) Should LADWP redesign a component of the Project to avoid a cultural resource, LADWP may provide documentation (36 CFR § 800.4(d)(1)) to the ANF and BLM demonstrating that the potential for adverse effects to that resource has been eliminated through redesign and that National Register eligibility evaluation of the resource may no longer be necessary. The ANF and BLM will respond to LADWP within 10 working days to agree or disagree with LADWP's assessment. The ANF shall forward the record of consultation to the SHPO. The SHPO will have 30 days to respond to the ANF. If LADWP receives an objection to its assessment that evaluation of eligibility is no longer necessary, it will proceed with the evaluation.

(D) For each cultural resource that has been determined eligible to the National Register, LADWP shall submit to the ANF and BLM a proposed plan to treat (mitigate) the adverse effects of the Project on the affected cultural resource. If a treatment plan is submitted separately from LADWP's recommendation of eligibility, the ANF and BLM shall respond in writing to LADWP within 30 days of receipt of LADWP's treatment plan. ANF and BLM shall provide Indian Tribes, Concurring Parties, and interested groups and individuals an

354 opportunity to comment on the treatment plan. The ANF will consolidate the responses and
355 forward them to all parties. LADWP will revise the treatment plan, if necessary, taking into
356 account the comments received. If the ANF and BLM concur with the revised treatment plan,
357 the ANF will forward the treatment plan to the SHPO for comment or concurrence. The ANF
358 shall take into account any comments received from SHPO regarding a treatment plan and
359 direct LADWP to make such changes to the plan as the ANF, in consultation with the BLM,
360 deems appropriate.

361 (1) The ANF has the authority to determine how any resource on ANF lands will be
362 managed should SHPO not respond within the allotted time. The BLM has the authority
363 to determine how any resource on BLM-administered lands will be managed should
364 SHPO not respond within the allotted time.

365 (2) Any treatment plan proposed by LADWP may allow for a phased approach to treatment
366 so that if LADWP believes that National Register eligibility is not supported by data or
367 other information recovered during an initial phase of study, LADWP may again consult
368 with the ANF and BLM, seeking concurrence that the cultural resource is, in fact, not
369 National Register eligible or that an alternative treatment of adverse effects is more
370 appropriate. Any revision or amendment to a treatment plan shall follow the same
371 protocol for concurrence by the ANF and BLM as for the original treatment plan.
372

373 374 IV. CONSTRUCTION PHASE MANAGEMENT PLAN 375

376 This PA provides for the preparation and implementation of a Construction Phase Management
377 Plan (CPMP), which will define procedures for the management of historic properties before and
378 during the construction phase of BR RTP, and a Historic Properties Management Plan (HPMP)
379 (Stipulation V), which will define procedures for the management of historic properties during
380 the future operations and maintenance phase of the Project. The construction phase is defined to
381 include Section 106 compliance activities implemented before and during construction of
382 BR RTP.
383

384 (A) The CPMP will be prepared by LADWP and before implementation, it will be approved by
385 the Signatories and reviewed by Concurring Parties. The draft CPMP will be made Appendix
386 A [TO BE DEVELOPED] of this PA. The CPMP for the Undertaking will detail a historic
387 preservation program to:

- 388 (1) Identify potential historic properties in the APE;
- 389 (2) Evaluate cultural resources for eligibility for inclusion in the National Register that would
390 be potentially affected by localized components of the Undertaking;
- 391 (3) Determine ways to avoid, minimize, or mitigate adverse effects on historic properties
392 within the APE;
- 393 (4) Manage previously unidentified archaeological or historic sites discovered during
394 construction of the BR RTP;
- 395 (5) Consult and coordinate with government agencies and Indian Tribes with regard to
396 implementation of the CPMP;
- 397 (6) Provide for curation of archaeological and historical items associated with the historic
398 preservation program for the Undertaking;
- 399 (7) Define the roles and responsibilities of the ANF, BLM, and LADWP in any management
400 of historic properties in the APE.
- 401 (8) In order to ensure the proper treatment of Native American human remains and
402 associated grave items, and to comply with NAGPRA and implementing regulations 43
403 CFR Part 10, the CPMP shall include a NAGPRA Plan of Action (POA) prepared in
404 consultation with the Tribes and other interested Native American Groups.

- 405
406 (B) Disposition of recovered cultural materials (archaeological and historic items) discovered
407 prior to and during construction of the BRRTP will be determined through consultation
408 between Signatories, Indian Tribes, Concurring Parties, and interested parties, with their
409 ultimate disposition determined by the Federal Land Managing Agency or Landowner where
410 the find or item was discovered, pursuant to 16 USC 470cc (b)(3) and its implementing
411 regulations (36 CFR § 79.2(b)(2)).
412
- 413 (C) ANF and BLM shall implement the CPMP required to manage historic and unevaluated
414 properties within the APE on lands administered by the ANF and the BLM and on other
415 lands. The CPMP, including National Register evaluation, determination of effects, review,
416 and consultation processes, may be completed in phases and by task. The CPMP shall
417 provide sufficient flexibility to permit Notices to Proceed for portions of the Undertaking on
418 a phased (tiered) basis.
419
- 420 (D) Should any Signatory, the Invited Signatory or a Concurring Party determine that changes to
421 the agreed upon CPMP are warranted to modify existing elements, or to add or delete some
422 elements, of the historic preservation program defined by the CPMP, all the Signatories and
423 the Invited Signatory to the PA shall consult to make changes. The ANF shall then consult in
424 writing with the SHPO and Concurring Parties to determine if the proposed changes
425 constitute a significant revision of the historic preservation program. The SHPO will have 45
426 days to respond in writing to the proposed changes to the CPMP. If the Signatories and
427 Concurring Parties concur that the proposed changes do not constitute a significant revision
428 to the CPMP, or if the SHPO does not respond within 45 days, then the ANF, BLM and
429 LADWP will proceed to revise and implement the appropriate elements of the CPMP. Should
430 any Signatory or the Invited Signatory object to the proposed changes to the CPMP, the
431 objecting parties will proceed according to Stipulation X of this PA.
432

433 LADWP shall describe any revision to the CPMP, whether determined significant or
434 insignificant, in its annual Historic Preservation Compliance Report (HPCR) as required in
435 Stipulation VI(B).
436
437

438 **V. HISTORIC PROPERTIES MANAGEMENT PLAN**

439

440 The purpose of the HPMP will be to direct the management of historic properties in the post-
441 construction operations and maintenance phase of the BRRTP. LADWP shall notify the ANF of
442 the date when construction is deemed to have been completed and operations and maintenance
443 begins for each Project component.
444

- 445 (A) LADWP shall develop the HPMP for the Undertaking detailing a historic preservation
446 program to:
- 447 (1) Manage previously unidentified archaeological or historic sites discovered during
448 operation and maintenance of the BRRTP;
 - 449 (2) Consult and coordinate with government agencies and Indian Tribes with regard to
450 implementation of the HPMP;
 - 451 (3) Support interpretation of historic properties to the public and other public
452 involvement in historic preservation; and define the roles and responsibilities of the
453 ANF, BLM, and LADWP in any long-term management of historic properties in the
454 APE.

(4) Provide for curation or disposition of archaeological and historical items in accordance with the historic property preservation program for the Undertaking; disposition of recovered cultural materials discovered during operations and maintenance of the BR RTP will be determined through consultation between Signatories, the Invited Signatory, Indian Tribes, Concurring Parties, and interested parties, with their ultimate disposition determined by the Federal Land Managing Agency or Landowner where the find or item was discovered, pursuant to 16 USC 470cc(b)(3) and its implementing regulations (36 CFR § 79.2(b)(2)).

(B) The HPMP shall address, at a minimum and in appropriate detail, the elements defining the long-term historic preservation program during operations and maintenance activities for BR RTP. The HPMP may include provisions for the programmatic treatment of adverse effects to historic properties that could potentially occur as a result of operations and maintenance of the transmission line and related facilities (e.g., pole replacement, road grading). The HPMP shall include a NAGPRA POA, as described in Stipulation IV(A).

The HPMP will be written and organized in a manner so that sensitive information regarding historic properties is kept confidential (see Section 304 of the NHPA; Section 9 of ARPA; Executive Order 13007, Indian Sacred Sites; California Government Code, Chapter 3.5, Section 6354.10; and access agreements with the California Historical Resource Information System (CHRIS)).

(C) The HPMP may be prepared by LADWP as a single document addressing all components of the BR RTP or may be completed in phases and by task. Any version of the HPMP shall be prepared and circulated for review as defined below in Subsection (C)(1-4) of this Stipulation. If the HPMP is prepared incrementally, by phase or by task, LADWP shall first prepare a basic HPMP that defines the general principles and procedures LADWP will follow in the management of historic properties and unevaluated resources as outlined in Subsection (A)(1-4) of this Stipulation. The HPMP will then be supplemented for each BR RTP component by specific management prescriptions for each historic property and unevaluated resource.

(1) Not less than 60 days prior to the estimated date of completing construction on the first BR RTP segment, an Administrative Draft HPMP shall be prepared and submitted by LADWP to the ANF and BLM for review and comment. Within 30 calendar days following receipt, the ANF and BLM will provide written comments to LADWP and direct LADWP to make revisions. The resulting document will be the Draft HPMP.

(2) The ANF shall distribute the Draft HPMP to the BLM, SHPO, and Concurring Parties for review and comment. Reviewers of the Draft HPMP will have 30 calendar days from date of receipt to provide their written comments to the ANF.

(3) The ANF will take into account comments received from the BLM, SHPO, and Concurring Parties and will direct LADWP to make appropriate changes in the Draft HPMP. LADWP shall submit a revised HPMP to the ANF within 90 calendar days of receipt of the ANF's directive to make changes. Upon acceptance by the ANF, the resulting document will be the Final HPMP. The Final HPMP shall be provided to the Signatories within 10 working days of receipt from LADWP by the ANF of an acceptable Final HPMP. The ANF, BLM, and SHPO shall indicate their acceptance of the Final HPMP in letters of concurrence.

(4) The ANF shall notify the Concurring Parties that the Final HPMP has been completed. The ANF shall, within 30 calendar days of the ANF's, BLM's, and SHPO's acceptance of the Final HPMP, provide copies of the Final HPMP to the Concurring Parties.

Should any Signatory, the Invited Signatory or a Concurring Party object to the content of the Draft or Final HPMP, the ANF shall proceed to resolve the objection(s) consistent with Stipulation X, below.

(D) A Historic Preservation Compliance Report (HPCR) shall be prepared consistent with Stipulation VI(B), below. LADWP shall describe any revision to the HPMP, whether determined significant or insignificant, in its annual HPCR.

(E) Should any Signatory, the Invited Signatory or a Concurring Party determine that changes to the HPMP are warranted, the ANF shall consult with the BLM, SHPO, LADWP, and Concurring Parties to make the agreed upon changes. Should any Signatory or Invited Signatory object regarding proposed changes to the HPMP, the objecting parties will proceed according to Stipulation X of this PA.

VI. REPORTING

(A) LADWP shall submit draft reports of any cultural resource work undertaken pursuant to this PA to the ANF and BLM within 60 days of completion of fieldwork unless otherwise agreed to by the ANF, BLM, and LADWP. Reports for Historic Properties that cannot be avoided will include management recommendations that may include, but not be limited to, avoidance and mitigation measures, monitoring, data recovery methods, and long-term management goals. LADWP will distribute draft reports to the ANF, BLM and Concurring Parties for their review and comment subject to Stipulation XIII (Confidentiality of Records and Information). The ANF, BLM and any Concurring Party will have 30 days of receipt of any report to comment. ANF will consolidate comments and request LADWP to address ANF, BLM, or other Parties' comments and make the desired changes or revisions. Any draft reports pertaining to the evaluation of National Register significance or treatment of historic properties shall be provided to the SHPO by the ANF for comment within 30 days of receipt. The ANF will share any comments with the other Signatories and direct LADWP to prepare either a revised draft report or a final report to be submitted to the ANF within 60 days unless otherwise agreed to by the ANF and LADWP. Reports will be submitted electronically unless otherwise stipulated by the ANF. The number of hard copies to be submitted will be determined by the ANF. Any extensions to complete reports must be approved by the ANF. Copies of all final reports prepared during a calendar year will be submitted to all Signatories with the annual HPCR.

(B) ANF shall direct LADWP to compile a HPCR of cultural resource management activities conducted pursuant to this PA. A draft HPCR shall be provided to the ANF by LADWP not less than 30 days prior to the anniversary date of the execution of this PA, and the LADWP will distribute the draft HPCR to the ANF, BLM and Concurring Parties for comment. The Signatories and Concurring Parties will have 30 days of receipt of the draft HPCR to comment. ANF will consolidate Signatory and Concurring Party comments and direct LADWP to address their comments and make the desired changes or revisions. An HPCR will be required of LADWP annually for the first 5 years following completion of construction on all components of the Project. After 5 years the reports will be filed every 3 years unless the ANF directs otherwise.

The HPCR shall, at a minimum, report the following management activities in sufficient detail to allow the ANF, BLM and SHPO to determine that all terms and provisions of the PA have been carried out in the reporting year regarding efforts to:

- (1) Inventory, evaluate, manage, and treat adverse effects to historic properties within the APE;
- (2) Consult and coordinate with government agencies and Tribes with regard to implementation of the HPMP;
- (3) Provide for curation of archaeological and historical items associated with the historic preservation program for the Undertaking, to include the curation or disposition status of any archaeological or historic items recovered during the preceding year's cultural resource management activities;
- (4) Support interpretation of historic properties to the public and other public involvement in historic preservation; and
- (5) Any other activities as required of LADWP by the ANF and BLM to comply with this PA.

VII. STANDARDS

(A) **Professional Qualifications:** All actions prescribed by this PA that involve the identification, evaluation, analysis, recordation, treatment, monitoring, and disposition of historic properties and that involve the reporting and documentation of such actions in the form of reports, forms or other records, shall be carried out by or under the direct supervision of a person or persons meeting, at a minimum, the Secretary of the Interior's Professional Qualifications Standards (PQS) for archaeology, history, or architectural history, as appropriate (48 FR 44739). However, nothing in this stipulation may be interpreted to preclude any party qualified under the terms of this paragraph from using the services of properly supervised persons who do not meet the PQS.

(B) **Curation and Curation Standards:** To the extent permitted under California PRC § 5097.98 and § 5097.991, the materials and records resulting from the actions cited in Subsection (A) of this stipulation and located on non-federal lands shall be managed and curated in accordance with 36 CFR § 79. Where federal lands are involved, all records and materials resulting from the actions cited in Subsection (A) of this stipulation shall be curated in accordance with 36 CFR § 79 and the provisions of NAGPRA (43 CFR § 10) as applicable. Unless otherwise agreed to and stipulated in the HPMP, ANF, BLM and LADWP will attempt to have all collections curated at one location appropriate to each county. If cultural materials are recovered from private lands, ANF and BLM will seek to have the materials donated through a written donation agreement to be curated with other cultural materials. Native American human remains, and items identified as funerary objects, sacred objects, and objects of cultural patrimony (per 43 CFR § 10.2(d)) will be treated pursuant to a Plan of Action (POA) developed in accordance with NAGPRA (P.L. 101-601; USC 3001-3013; 104 STAT. 3048-3059) and its implementing rules and regulations (43 CFR § 10); and included in the CPMP and HPMP, which will be developed and implemented in consultation with Indian Tribes, the Most Likely Descendant and landowner and consistent with state and federal legal requirements.

If any human remains are discovered in the course of the Undertaking, the preferred course of treatment will be identified as provided for in the CPMP and HPMP, in consultation with the Most Likely Descendant and landowner and consistent with state and federal legal requirements.

- (C) **Documentation Standards:** Reporting on and documenting the actions cited in Subsection (A) of this stipulation shall conform to every reasonable extent with the *Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation* (48 FR 44716-44740); the California Office of Historic Preservation's Preservation Planning Bulletin Number 4(a) December 1989, *Archaeological Resource Management Reports (ARMR): Recommended Contents and Format for the Preparation and Review of Archaeological Reports*; the BLM Manual, MS-8100, *The Foundations for Managing Cultural Resources*; terms of BLM Cultural Resource Use Permits and field authorizations, Forest Service Manual 2360, *Heritage Program Management*; terms of Forest Service permits and field authorizations; and any specific county or local requirements or report formats as necessary.

VIII. NATIVE AMERICAN CONSULTATION

The ANF shall continue to consult with Indian Tribes and other Native Americans groups and individuals as follows.

- (A) The ANF and BLM shall consult with Indian Tribes per NHPA, ARPA, AIRFA, and NAGPRA, applicable regulations (e.g., 36 CFR § 296 and 43 CFR § 10), and applicable Executive Orders (e.g., 13007 and 13175). Cultural items subject to NAGPRA shall be managed according to applicable provisions of NAGPRA.
- (B) The ANF has consulted with the BLM and California NAHC to develop a list of Tribes, organizations, groups, and individuals (Most Likely Descendants) that have been and shall continue to be consulted regarding BRRTTP. This list will be updated at least every 2 years following execution of this PA or until the HPMP has been executed. The consultation list will be used by the ANF for all Native American consultations.
- (C) Indian Tribes, groups, organizations and individuals consulted by the ANF shall be, at a minimum, those identified by the California NAHC; and Indian Tribes recognized by the Secretary of the Interior per 36 CFR §§ 800.2(c)(2800.3(f)(2), 800.14(b)(2), 800.14(f)), and as interested parties per 36 CFR § 800.2(c)(5)).
- (D) The ANF and BLM shall not delegate their government-to-government consultation responsibilities pertaining to the Undertaking. The ANF will be responsible for keeping the administrative record of all Indian Tribe consultation regarding the Undertaking and shall share that record with the other Signatories, the Invited Signatory and Concurring Parties, as requested.

IX. COSTS

LADWP shall bear the expense of identification, evaluation, and treatment of all cultural properties directly or indirectly affected by BRRTTP-related activity to the extent that such properties are affected by the Project. Such costs will include, but not be limited to, pre-field planning, field work, post-field analysis, research, preparation of reports (including draft and final

versions), and costs associated with curation of Project-related documentation and artifact collections.

X. RESOLVING OBJECTION

(A) Should any of the Signatories or the Invited Signatory to this PA object, at any time, to the manner in which the terms of this PA are implemented, they will make the objection to the ANF. The ANF shall immediately consult with other Signatories and the Invited Signatory to resolve the objection within 30 days. If the Signatories and the Invited Signatory resolve the objection, the ANF may authorize the disputed action to proceed in accordance with the terms of such resolution.

(B) If, at the end of the 30 day consultation period, the Signatories and the Invited Signatory determine that the objection cannot be resolved through such consultation, the ANF shall forward all documentation relevant to the objection to the Council pursuant to 36 CFR §800.2(b)(2). Any comments provided by the Council will be taken into account by the Signatories and Invited Signatory in reaching a final decision regarding the objection. The ANF shall have the authority per the NHPA to make the final decision resolving the objection if the objection pertains to historic properties in the APE affected by the Undertaking, except for lands administered by the BLM, in which case the ANF shall receive prior written approval of the BLM. The ANF, as appropriate, shall notify the SHPO, BLM, Council, and LADWP in writing of its final decision within 14 days after it is rendered.

(C) The Signatories' and the Invited Signatory's responsibility to carry out all other actions under this PA that are not the subject of the objection will remain unchanged.

(D) At any time during implementation of the terms of this PA, should a written objection pertaining to the PA be raised by a Concurring Party, the ANF shall immediately notify the Signatories, Invited Signatory, and Concurring Parties, all of whom may offer comments. The ANF shall consult with the objecting party for a period of no more than 30 days from the date of the objection. Within 14 days following closure of consultation, the ANF shall notify all parties of its decision regarding the objection in writing. In reaching its final decision the ANF, subject to BLM approval on BLM-administered land, shall take into account all comments from the parties regarding the objection. Any dispute pertaining to the National Register eligibility of cultural resources covered by this PA shall be addressed by the Signatories and the Invited Signatory pursuant to 36 CFR § 800.4(c)(2). The Signatories shall determine if Subsections (A) and (B) of this stipulation shall be implemented to resolve a dispute regarding the eligibility of such historic properties or cultural resources.

XI. AMENDMENTS

(A) Any Signatory, Invited Signatory or Concurring Party to this PA may at any time propose amendments, whereupon all Signatories and the Invited Signatory shall consult among each other to consider such amendments pursuant to 36 CFR § 800.6(c)(7) and § 800.6(c)(8). This PA may be amended only upon written agreement of all the Signatories and Invited Signatory.

(B) The resource treatment delineated in the CPMP (Appendix A [TO BE DEVELOPED]) may be amended collectively or by individual resource through consultation with the Signatories,

Invited Signatory, and Concurring Parties and agreement by the Signatories and Invited Signatory without requiring amendment of the PA, unless the Signatories and Invited Signatory, through such consultation, decide otherwise.

- (C) Amendments to this PA shall take effect on the dates that they are fully executed by the Signatories and Invited Signatory.

XII. TERMINATION

- (A) Only Signatories and the Invited Signatory may terminate this PA. If a Signatory or the Invited Signatory proposes to amend this PA, and it is not amended as provided for in Stipulation XI, or if a Signatory or the Invited Signatory proposes termination of this PA for other reasons, the party proposing termination shall notify the other Signatories and the Invited Signatory in writing, explain the reasons for proposing termination, and consult for no more than 30 days to seek alternatives to termination.
- (B) Should such consultation result in a written agreement on an alternative to termination, the Signatories and the Invited Signatory shall proceed in accordance with that agreement.
- (C) Should such consultation not result in a written agreement resolving the Signatory's or Invited Signatory's concerns, the party proposing termination may terminate this PA by promptly notifying the other Signatories and the Invited Signatory in writing.
- (D) Should this PA be terminated, then the Signatories and Invited Signatory shall either consult in accordance with 36 CFR § 800.14(b) to develop a new Agreement or request the comments of the Council pursuant to 36 CFR § 800.4-800.6. The Signatories and Invited Signatory will include Concurring Parties in the consultation.
- (E) Beginning with the date of termination, the Signatories and Invited Signatory shall ensure that until and unless a new PA is executed for the actions covered by this PA, such Undertaking shall be reviewed individually in accordance with 36 CFR § 800.4-800.6 and, depending upon the nature of the action, according to applicable state law.
- (F) Any Signatory, Invited Signatory or Concurring Party may terminate its participation in the PA if its roles and responsibilities originally assigned under this PA are no longer appropriate or necessary, by agreement of the Signatories. The PA will otherwise continue in full force and effect following the departure of any party unless the Signatories and Invited Signatory decide otherwise.

XIII. CONFIDENTIALITY OF RECORDS AND INFORMATION

The Signatories and the Invited Signatory shall maintain the confidentiality of records and information pertaining to the location, character, or ownership of archaeological sites and historic properties consistent with NHPA Section 304, ARPA Section 9, and California Government Code 6254.10, as applicable. For National Register resources, the ANF and BLM may determine that certain records and files are appropriate to distribute to parties outside the agency.

752 **XIV. ANNUAL MEETINGS**

753
754 The Signatories and the Invited Signatory agree to meet annually, beginning one year from the
755 date of the execution of this PA, to discuss implementation of this PA and other items of mutual
756 interest if such a request is made by one of the Signatories or the Invited Signatory. These
757 meetings may coincide with delivery of the HPCR and may occur by teleconference or in-person
758 at the discretion of the Signatories and the Invited Signatory.
759

760
761 **XV. DURATION OF THIS PROGRAMMATIC AGREEMENT**

762
763 Unless this PA is terminated pursuant to Stipulation XII above, another agreement executed for
764 the Undertaking supersedes it, or the Undertaking itself has been terminated, this PA shall remain
765 in full force and effect until ANF, in consultation with the other Signatories and the Invited
766 Signatory, determines that all aspects of the Undertaking have been completed and that all terms
767 of this PA and any subsequent tiered agreements have been fulfilled in a satisfactory manner.
768 Upon a determination by ANF that all aspects of the Undertaking have been completed and that
769 all terms of this PA and any subsequent tiered agreements have been fulfilled in a satisfactory
770 manner, ANF shall notify the other Signatories, the Invited Signatory and Concurring Parties of
771 this PA in writing of the agency's determination. This PA will terminate and have no further force
772 or effect on the day that ANF so notifies the other Signatories and the Invited Signatory to the
773 PA.
774

775 This PA will expire if the Undertaking or the stipulations of this PA have not been implemented
776 within five (5) years from the date of its execution. At such time, and prior to work continuing on
777 the Undertaking, the ANF shall either execute a Memorandum of Agreement (MOA) pursuant to
778 36 CFR § 800.6(c), or request, take into account, and respond to the comments of the Council per
779 36 CFR § 800.7(c)(4). Prior to such time, the ANF may consult with the other Signatories, the
780 Invited Signatory, and Concurring Parties to reconsider the terms of the PA and amend it in
781 accordance with Stipulation XI above. The ANF shall notify the Signatories, the Invited
782 Signatory, and Concurring Parties as to the course of action it will pursue within 30 days.
783

784 This PA expires 25 years from its effective date unless extended by written agreement of the
785 Signatories and Invited Signatory. The Signatories and the Invited Signatory shall consult at year
786 10 to review this PA. Additionally, the Signatories and the Invited Signatory shall consult not less
787 than one year prior to the expiration date to reconsider the terms of this PA and, if acceptable,
788 have the Signatories and the Invited Signatory extend the term of this PA. Reconsideration may
789 include continuation of the PA as originally executed or amended, or termination. Extensions are
790 treated as amendments to the PA under Stipulation XI.
791

792
793 **XVI. EFFECTIVE DATE**

794
795 This PA and any amendments will take effect on the date that it has been fully executed by the
796 Signatories and the Invited Signatory. The PA and any amendments thereto shall be executed in
797 the following order: (1) LADWP, (2) BLM, (3) ANF, and (4) SHPO. Execution and
798 implementation of this PA is evidence that the ANF and BLM have afforded the Council a
799 reasonable opportunity to comment on the Undertaking and its effects on historic properties. The
800 Signatories and the Invited Signatory to this PA represent that they have the authority to sign for
801 and bind the entities on behalf of whom they sign.

802
803 **SIGNATORIES:**
804

805 UNITED STATES DEPARTMENT OF AGRICULTURE, FOREST SERVICE -- ANGELES
806 NATIONAL FOREST
807

808
809
810 By: _____ Date: _____
811 Marty Dumpis
812 Acting Forest Supervisor
813

814
815 UNITED STATES DEPARTMENT OF THE INTERIOR, BUREAU OF LAND
816 MANAGEMENT
817

818
819
820 By: _____ Date: _____
821 Hector Villalobos
822 Field Manager, Ridgecrest Field Office
823

824
825
826 CALIFORNIA STATE HISTORIC PRESERVATION OFFICER
827

828
829
830 By: _____ Date: _____
831 Milford Wayne Donaldson, FAIA
832 State Historic Preservation Officer
833

834
835
836 **INVITED SIGNATORY:**
837

838
839
840 LOS ANGELES DEPARTMENT OF WATER AND POWER
841

842
843
844
845 By: _____ Date: _____
846 Lorraine Paskett
847 Senior Assistant General Manager, Sustainability Program and External Affairs, LADWP
848

849
850 **CONCURRING PARTIES**
851

852

APPENDIX A

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D R A F T

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CONSTRUCTION PHASE MANAGEMENT PLAN

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TO BE DEVELOPED

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APPENDIX P: EIS/EIR DISTRIBUTION LIST

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Organization Type	Organization Name	State	Zip	Email
CITY	Acton - Agua Dulce Unified School District	A	93510	SHalperin@aadusd.k12.ca.us
Repository	Acton-Agua Dulce Library	A	93510	
FED	Advisory Council on Historic Preservation	C	20004	
ORG	AGUA DULCE CIVIC ASSOCIATION	A	91390	
COUNTY	Antelope Valley Air Quality Management District	A	93535	
	Antelope Valley Healthcare District	A	93534	
	Antelope Valley Mosquito and Vector Control District	A	93584	
CITY	Antelope Valley Resource Conservation District	A	93534	avrcd@carcd.org
CITY	Antelope Valley Union High School District	A	93534	bettyv@avhsd.org
COUNTY	Antelope Valley-East Kern Water Agency	A	93551	
STATE	CA DEPT. OF FORESTRY & FIRE PROTECTION	A	93710	
STATE	CA Environmental Protection Agency Los Angeles	A	90013	
STATE	CA STATE CLEARINGHOUSE	A	95814	
STATE	California Department of Conservation, Division of Resources Protection	A	95814-3528	brian.leahy@conservation.ca.gov
STATE	California Department of Fish & Game, Southern Region	A	92123	
STATE	California Department of Fish & Game, Southern Region	A		
STATE	California Department of Fish and Game, Central Region	A	93710	
STATE	California Department of Forestry and Fire Protection	A	94244-2460	
STATE	California Department of Parks & Recreation	A	91302-1909	
STATE	California Department of Parks and Recreation	A	93534-4754	
STATE	California Department of Parks and Recreation District	A	93534-4754	
COUNTY	California Department of Transportation	A	93728-2616	
STATE	California Department of Transportation, District	A	90012	
STATE	California Department of Water Resources	A	95814	
STATE	California Department of Water Resources	A	95821	
STATE	California Department of Water Resources	A	94236-0001	
STATE	California Energy Commission	A	95814	jbartrid@energy.state.ca.us
	California Public Utilities Commission	A	94102-3298	
ELECT	California Senate	A	95814	
STATE	California State Lands	A	95825-8202	brandm@slc.ca.gov
STATE	CALIFORNIA STATE LANDS COMMISSION	A	95825	
STATE	CALTRANS	A	90012	
CITY	Castaic Lake Water Agency	A	91350	
CITY	Castaic Union School District	A	91355	info@castaic.k12.ca.us
ELECT	City of California City	A	93505	
ELECT	City of California City Planning Department	A	93505	CalCityRealtor@aol.com
CITY	City of Lancaster	A	93534	
CITY	City of Lancaster	A	93534	
CITY	City of Lancaster	A	93534	
CITY	City of Lancaster Community Development	A	93534	
CITY	City of Lancaster Planning Department	A	93534	
ELECT	City of Los Angeles	A	90012	
ELECT	City of Palmdale	A	93550	
CITY	City of Palmdale Planning Department	A	93550	llile@cityofpalmdale.org
CITY	City of Palmdale, Planning	A	93550	
CITY	City of Santa Clarita	A	91355	
ELECT	City of Santa Clarita	A	91355	
CITY	City of Santa Clarita, Community Development	A	91355	
CITY	City of Santa Clarita, Planning	A	91355	
CITY	City of Santa Clarita, Planning	A	91355	
COUNTY	County of Kern Planning Department	A	93301	
				loreleio@co.kern.ca.us
COUNTY	County of Kern Planning Department	A	93301-2370	
				planning@co.kern.ca.us
COUNTY	County of Kern Roads Department	A	93301-2370	roads@co.kern.ca.us
COUNTY	County of Los Angeles Fire Department	A	90040	
COUNTY	County of Los Angeles, Department of Parks and Recreation	A	90020	info@parks.lacounty.gov
COUNTY	County of Los Angeles, Dept of Public Works	A	91803	
FED	Department of Defense, Edwards Air Force Base	A	93536	

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Barren Ridge Renewable Transmission Project
Draft EIS/EIR Distribution List

Organization Type	Organization Name	Title	First Name	Last Name	Address	City	State	Zip	Email
FED	Federal Aviation Administration, Western-Pacific Region	Regional Administrator			15000 Aviation Blvd.	Lawndale	CA	90261	
FED	Federal Aviation Administration, Western-Pacific Region	Regional Administrator	William C.	Withycombe	PO Box 92007	Los Angeles	CA	90009-2007	
FED	Federal Highway Administration	Resource Office	Randall	Lisa	12300 West Dakota Avenue, Suite 340	Lakewood	CA	90288	
NA	Gabrielino-Tongva Indians Tribal Council	Chair and Secretary	Robert F. & Math	Dorame	5450 Slauson Ave., Ste. 151	Culver City	CA	90230-6000	
	Green Valley County Water District		Laura	Vernitti	39520 Calle Cascada	Santa Clarita	CA	91390	
ELECT	Green Valley Town Council	President	Dale	Kimmel	15637 Calle El Capitan	Green Valley	CA	91390-1048	
CITY	Hughs-Elizabeth Lakes Union Elementary School District	Superintendent/Principal	Sandra	Lyon	16633 Elizabeth Lakes Road	Lake Hughes	CA	93532	slyon@hws.lacoe
COUNTY	Kern Council of Governments	Executive director	Ronald	Brummett	1401 19th Street, Suite 300	Bakersfield	CA	93301	
COUNTY	Kern Council of Governments	Assistant director	Darrel	Hildebrand	1401 19th Street, Suite 300	Bakersfield	CA	93301	
COUNTY	Kern County	Director	Ted	James	Public Services Building, 2700 M Street, Suite 100	Bakersfield	CA	93301-2370	
ELECT	Kern County (Board of Supervisors)	District 2, Supervisor	Don	Maben	1115 Truxtun Ave, 5th Floor County Admin Center	Bakersfield	CA	93301-4617	
ELECT	Kern County (Board of Supervisors)	District 3, Supervisor	Mike	Maggard	1115 Truxtun Ave, 5th Floor County Admin Center	Bakersfield	CA	93301-4617	
ELECT	Kern County (Board of Supervisors)	District 5, Supervisor	Michael	Rubio	1115 Truxtun Ave, 5th Floor County Admin Center	Bakersfield	CA	93301-4617	
ELECT	Kern County (Board of Supervisors)	District 1, Supervisor	Raymond	Watson	1115 Truxtun Ave, 5th Floor County Admin Center	Bakersfield	CA	93301-4617	
COUNTY	Kern County Office of Education	Superintendent	Dr. Larry E.	Reider	1300 17th Street, City Centre	Bakersfield	CA	93301-4504	lareider@kern.org
COUNTY	Kern County, Department of Parks and Recreation	Director	Robert	Lerude	1110 Golden State Avenue	Bakersfield	CA	93301	parks-web@co.kern.ca.us
COUNTY	Kern County, Roads Department	Engineer II	Brian R.	Blacklock	2700 M Street, Suite 400	Bakersfield	CA	93301-2730	
COUNTY	LA CO FLOOD CONTROL DIST S BY S				500 W TEMPLE ST RM 754	LOS ANGELES	CA	90012	
COUNTY	LA COUNTY DEPT. OF REGIONAL PLANNING	Director Of Planning	JAMES	HARTL, AICP	320 W. TEMPLE STREET, ROOM 1390	LOS ANGELES	CA	90012	
COUNTY	LA COUNTY FLOOD CONTROL DISTRICT				500 W TEMPLE ST 754	LOS ANGELES	CA	90012	
COUNTY	LA COUNTY PARKS & RECREATION	Park Planner	Jui Ing	Chien	510 S Vermont Ave, Rm 201	LOS ANGELES	CA	90020	
ELECT	LA County Supervisor		David	Antonovich	500 W. Temple St. Rm 383	Los Angeles	CA	90012	
COUNTY	Lahontan Regional Water Quality Control Board	Engineering Geologist	Mack	Hakakian	14440 Civic Drive, Suite 200	Victorville	CA	92392	CMitton@waterboards.ca.gov
COUNTY	Lahontan Regional Water Quality Control Board	Senior Water Resources Control Engineer	Cindi	Mitton	14440 Civic Drive, Suite 200	Victorville	CA	92392	CMitton@waterboards.ca.gov
	Lancaster Cemetery District		Barbara	Little	111 East Lancaster Boulevard	Lancaster	CA	93535	
CITY	Lancaster School District	Superintendent	Howard	Sundberg	44711 No. Cedar Avenue	Lancaster	CA	93534	
ELECT	Leona Valley Town Council	President	Suzy	Love	40350 N. 75th St West	Leona Valley	CA	93551-7523	
	Los Angeles City-County Native American Indian Commission		Ron	Andrade	3175 West 6th Street	Los Angeles	CA	90020	
ELECT	Los Angeles County (Board of Supervisors)	District 7, Council Member	Richard	Alarcon	200 N. Spring St., Rm. 425	Los Angeles	CA	90012	
ELECT	Los Angeles County (Board of Supervisors)	District 12, Council Member	Greig	Smith	200 N. Spring St., Rm. 405	Los Angeles	CA	90012	
ELECT	Los Angeles County (Board of Supervisors)	District 3, Supervisor	Zev	Yaroslavsky	500 W. Temple Street, Suite 525	Los Angeles	CA	90012-2713	
COUNTY	Los Angeles County Office of Education	Superintendent	Darline P.	Robles	9300 Imperial Highway	Downey	CA	90242-2813	robles_darline@lacoe.edu
COUNTY	Los Angeles County Parks & Recreation	Environmental Section Head			510 S Vermont Ave Rm 201	Los Angeles	CA	90020	
COUNTY	Los Angeles County Parks & Recreation	Director	Russ	Guiney	510 S Vermont Ave Rm 201	Los Angeles	CA	90020	
COUNTY	Los Angeles County, Department of Public Works	Land Development Division	Toan	Duong	900 S. Fremont Avenue	Alhambra	CA	91803-1331	
COUNTY	Los Angeles County, Department of Public Works	Director/Road Commissioner	Donald L.	Wolfe	P. O. Box 1460	Alhambra	CA	91802-1460	http://dpw.lacounty.gov/General/contact.cfm
COUNTY	Los Angeles County, Department of Regional Planning	Planning Director	Bruce	McClendon	1390 Hall of Records 320 West Temple Street	Los Angeles	CA	90012	
									dslavin@planning.lacounty.gov
CITY	Los Angeles Department of City Planning	Deputy Director	Gordon	Hamilton	200 No. Spring St. City Hall Rm.525	Los Angeles	CA	90012	
CITY	Los Angeles Department of City Planning	Director	Con	Howe	200 No. Spring St. City Hall Rm.525	Los Angeles	CA	90012	
CITY	Los Angeles Department of City Planning	Deputy Director	Robert A.	Sutton	200 No. Spring St. City Hall Rm.525	Los Angeles	CA	90012	
CITY	Los Angeles Department of City Planning	Deputy Director	Franklin P. Eberh	Eberhard	200 No. Spring St. City Hall Rm.525	Los Angeles	CA	90012	
CITY	Los Angeles Department Of Water and Power		Charles	Holloway	111 North Hope Street RM 1044	LOS ANGELES	CA	900122694	
COUNTY	Los Angeles Regional Water Quality Control Board	401 Certification	Valarie	Carrillo	230 W. 4th Street, Suite 200	Los Angeles	CA	90013	
	Los Angeles World Airports		Kim	Day	P.O Box 92216	Los Angeles	CA	90009	
COUNTY	MOJAVE DESERT AQMD		CHARLES	FRYXELL	14306 PARK AVE	VICTORVILLE	CA	92392	
Repository	Mojave Public Library	Head Librarian			16916 State Highway 14 # D2	Mojave	CA	93501	
CITY	Mojave Unified School District	Superintendent	Larry	Phelps	3500 Douglas Avenue	Mojave	CA	93501	
FED	National Marine Fisheries Service, Habitat Conservation Division, Southwest Region				501 West Ocean Blvd., Suite 4200	Long Beach	CA	90802-4213	
NA	Native American Heritage Comm.	Executive Secretary	Larry	Myers	915 Capitol Mall, Rm. 288	Sacramento	CA	95814	nahc@pacbell.net
FED	Natural Resources and Environmental Affairs	MAGTFTC Marine Corps Air Ground Com	Marie	Cottrell	Building 1451, Box 788110	TWENTYNINE PALMS	CA	92278-8110	
FED	Natural Resources Conservation Service, USDA	National Environmental Coordinator			P.O. Box 2890, Room 6158-S	Washington	DC	20013-2890	
	Newhall County Water District		Karin J.	Russell	P.O. Box 220970	Santa Clarita	CA	91322	
	Newhall Ranch High Country Recreation and Conservation Authority		Larry	Hensley	510 S. Vermont Ave.	LOS ANGELES	CA	90020	
Repository	Palmdale City Library	Head Librarian			700 East Palmdale Blvd.	Palmdale	CA	93550	
CITY	Palmdale School District	Superintendent	Roger D.	Gallizzi	39139 North 10th Street East	Palmdale	CA	93550	rdgallizzi@psd.k12.ca.us
Repository	Quartz Hill Library	Head Librarian			42018 N. 50th St. W.	Quartz Hill	CA	93536-3509	
	Quartz Hill Water District	General Manager	Chad	Reed	42141 N. 50th Street West	Quartz Hill	CA	93536	
NA	San Fernando Band of Mission Indians	Chairperson	John	Valenzuela	PO Box 221838	Newhall	CA	91322	
NA	San Manuel Band of Misson Indians				P.O. Box 266	Patton	CA	92369	
NA	Santa Ynez Band of Mission Indians				P.O. Box 365	Santa Ynez	CA	93460	
CITY	Saugus Union School District	Superintendent	Judy	Fish	24930 Avenue Stanford	Santa Clarita	CA	91355	jfish@sauqus.k12.ca.us

Transmission Project
Location List

Address	City	State	Zip	Email
15000 Aviation Blvd.	Lawndale	CA	90261	
PO Box 92007	Los Angeles	CA	90009-2007	
12300 West Dakota Avenue, Suite 340	Lakewood	CA	90288	
5450 Slauson Ave., Ste. 151	Culver City	CA	90230-6000	
39520 Calle Cascada	Santa Clarita	CA	91390	
15637 Calle El Capitan	Green Valley	CA	91390-1048	
16633 Elizabeth Lakes Road	Lake Hughes	CA	93532	slyon@lws.lacoe
1401 19th Street, Suite 300	Bakersfield	CA	93301	
1401 19th Street, Suite 300	Bakersfield	CA	93301	
Public Services Building, 2700 M Street, Suite 100	Bakersfield	CA	93301-2370	
1115 Truxtun Ave, 5th Floor County Admin Center	Bakersfield	CA	93301-4617	
1115 Truxtun Ave, 5th Floor County Admin Center	Bakersfield	CA	93301-4617	
1115 Truxtun Ave, 5th Floor County Admin Center	Bakersfield	CA	93301-4617	
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1300 17th Street, City Centre	Bakersfield	CA	93301-4504	lareider@kern.org
1110 Golden State Avenue	Bakersfield	CA	93301	parks-web@co.kern.ca.us
2700 M Street, Suite 400	Bakersfield	CA	93301-2730	
500 W TEMPLE ST RM 754	LOS ANGELES	CA	90012	
320 W. TEMPLE STREET, ROOM 1390	LOS ANGELES	CA	90012	
500 W TEMPLE ST 754	LOS ANGELES	CA	90012	
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500 W. Temple St. Rm 383	Los Angeles	CA	90012	
14440 Civic Drive, Suite 200	Victorville	CA	92392	CMitton@waterboards.ca.gov
14440 Civic Drive, Suite 200	Victorville	CA	92392	CMitton@waterboards.ca.gov
111 East Lancaster Boulevard	Lancaster	CA	93535	
44711 No. Cedar Avenue	Lancaster	CA	93534	
40350 N. 75th St West	Leona Valley	CA	93551-7523	
3175 West 6th Street	Los Angeles	CA	90020	
200 N. Spring St., Rm. 425	Los Angeles	CA	90012	
200 N. Spring St., Rm. 405	Los Angeles	CA	90012	
500 W. Temple Street, Suite 525	Los Angeles	CA	90012-2713	
9300 Imperial Highway	Downey	CA	90242-2813	robles_darline@lacoe.edu
510 S Vermont Ave Rm 201	Los Angeles	CA	90020	
510 S Vermont Ave Rm 201	Los Angeles	CA	90020	
900 S. Fremont Avenue	Alhambra	CA	91803-1331	
P. O. Box 1460	Alhambra	CA	91802-1460	http://dpw.lacounty.gov/General/contact.cfm
1390 Hall of Records	Los Angeles	CA	90012	
320 West Temple Street				dslavin@planning.lacounty.gov
200 No. Spring St. City Hall Rm.525	Los Angeles	CA	90012	
200 No. Spring St. City Hall Rm.525	Los Angeles	CA	90012	
200 No. Spring St. City Hall Rm.525	Los Angeles	CA	90012	
200 No. Spring St. City Hall Rm.525	Los Angeles	CA	90012	
111 North Hope Street RM 1044	LOS ANGELES	CA	900122694	
230 W. 4th Street, Suite 200	Los Angeles	CA	90013	
P.O Box 92216	Los Angeles	CA	90009	
14306 PARK AVE	VICTORVILLE	CA	92392	
16916 State Highway 14 # D2	Mojave	CA	93501	
3500 Douglas Avenue	Mojave	CA	93501	
501 West Ocean Blvd., Suite 4200	Long Beach	CA	90802-4213	
915 Capitol Mall, Rm. 288	Sacramento	CA	95814	nahc@pacbell.net
Building 1451, Box 788110	TWENTYNINE PALMS	CA	92278-8110	
P.O. Box 2890, Room 6158-S	Washington	DC	20013-2890	
P.O. Box 220970	Santa Clarita	CA	91322	
510 S. Vermont Ave.	LOS ANGELES	CA	90020	
700 East Palmdale Blvd.	Palmdale	CA	93550	
39139 North 10th Street East	Palmdale	CA	93550	rdgallizzi@psd.k12.ca.us
42018 N. 50th St. W.	Quartz Hill	CA	93536-3509	
42141 N. 50th Street West	Quartz Hill	CA	93536	
PO Box 221838	Newhall	CA	91322	
P.O. Box 266	Patton	CA	92369	
P.O. Box 365	Santa Ynez	CA	93460	
24930 Avenue Stanford	Santa Clarita	CA	91355	jfish@saugus.k12.ca.us

Organization Type	Organization Name	State	Zip	Email
COUNTY	South Coast Air Quality Management District	CA	91765	echang@aqmd.gov
COUNTY	South Coast Air Quality Management District	CA	91765	
COUNTY	Southern California Association of Governments and Policy Department	CA	90017	
CITY	Southern Kern Unified School District	CA	93560	
STATE	STATE OFFICE OF HISTORIC PRESERVATION	CA	94296-0001	
STATE	State Water Resources Control Board	CA	95812	
CITY	Sulphur Springs School District	CA	91351	bnolet@sssd.k12.ca.us
Repository	Tehachapi Branch Library	CA	93561	
FED	U.S. Army Corps Of Engineers, LA Dist.	CA	90053-2325	
FED	U.S. Army Corps of Engineers, Los Angeles	CA	90017	PublicAffairs.SPL@usace.army.mil
FED	U.S. Army Engineer Division, South Pacific	CA	94105-2195	
FED	U.S. Coast Guard, Environmental Protection MEP	CA	20593	
FED	U.S. DEPT. OF ENERGY	CA	20585	
FED	U.S. DEPT. OF INTERIOR	CA	20240	
FED	U.S. ENVIRONMENTAL PROTECTION AGENCY	CA	94105	
FED	U.S. FISH AND WILDLIFE SERVICE	CA	93003	
FED	U.S. Fish and Wildlife Service, Ventura Office	CA	93003	
ELECT	U.S. House of Representatives	CA	20515	
ELECT	U.S. House of Representatives	CA	20515	
FED	U.S. Navy, Environmental Protection Division	CA	20350	
ELECT	United States Senate	CA	20510	
ELECT	United States Senate	CA	20510	
FED	US DOI	CA	95825	
FED	US DOT INS	CA	92607	
FED	US ENVIRONMENTAL PROTECTION AGENCY	CA	94105	
FED	USDA APHIS PPD/EAD	ID	20737-1238	
FED	USDA Forest Service, Angeles National Forest	CA	91006	
FED	USDA Forest Service, Angeles National Forest	CA	91006	
FED	USDA Forest Service, Angeles National Forest	CA	95687	
FED	USDA Forest Service, Angeles National Forest	CA	91355	
FED	USDA Forest Service, San Bernardino-National Forest	CA	92408	
FED	USDA, National Agricultural Library	ID	20705	
FED	USDI Bureau of Land Management, California	CA	92553	
FED	USDI Bureau of Land Management, Ridgecrest	CA	93555	Hector_Villalobos@ca.blm.gov
FED	USDI Bureau of Land Management, Ridgecrest	CA	93555	Hector_Villalobos@ca.blm.gov
Repository	VALENCIA LIBRARY	CA	91355	
CITY	West Valley County Water District	CA	92377	
CITY	Westside Union School District	CA	93536	
FED	US Dept of the Interior, Office of the Solicitor	CA	20240	
FED	Office of the Solicitor, Pacific Southwest Region	CA	95821	
FED	USDI Bureau of Land Management, California	CA	95825	
FED	USDI Bureau of Land Management, WO-21 NEPA Branch	CA	20240	
FED	Denver Library, Denver Federal Center Bldg	CO	80225-0047	
CITY	William S. Hart Union High School District	CA	91350	jcastell@hartdistrict.org

Barren Ridge Renewable Transmission Project
Draft EIS/EIR Distribution List

Organization Type	Organization Name	Title	First Name	Last Name	Address	City	State	Zip	Email
COUNTY	South Coast Air Quality Management District	Deputy Executive Director	Elaine C.	Chang	28165 Copley drive	Diamond Bar	CA	91765	echang@aqmd.gov
COUNTY	South Coast Air Quality Management District	CEQA Section	Steve	Smith	21865 Copley Drive	Diamond Bar	CA	91765	
COUNTY	Southern California Association of Governments, Planning and Policy Department	Deputy Executive Director	Jim	Gosnell	818 W. Seventh Street, 12th Floor	Los Angeles	CA	90017	
CITY	Southern Kern Unified School District	Superintendent	Rodney	Van Norman	3082 Glendower Street	Rosamond	CA	93560	
STATE	STATE OFFICE OF HISTORIC PRESERVATION	STATE HISTORIC PRESERVATION OFF	Milford Wayne	DONALDSON, FAIA	P.O. BOX 942896	SACRAMENTO	CA	94296-0001	
STATE	State Water Resources Control Board		Kari	Schumaker	1001 I Street	Sacramento	CA	95812	
CITY	Sulphur Springs School District	Superintendent	Dr. Robert	Nolet	17866 Sierra Highway	Canyon Country	CA	91351	bnolet@sssd.k12.ca.us
Repository	Tehachapi Branch Library	Head Librarian			1001 West Tehachapi Boulevard, Suite A-400	Tehachapi	CA	93561	
FED	U.S. Army Corps Of Engineers, LA Dist.	Attention: CESPL-CO-R			P.O. Box 2711	Los Angeles	CA	90053-2325	
FED	U.S. Army Corps of Engineers, Los Angeles District	District Commander	Col. Thomas H.	Magness, IV	915 Wilshire Boulevard, Suite 980	Los Angeles	CA	90017	PublicAffairs.SPL@usace.army.mil
FED	U.S. Army Engineer Division, South Pacific, CESP-D-CMP				333 Market Street, Room 1101	San Francisco	CA	94105-2195	
FED	U.S. Coast Guard, Environmental Protection Division, G-MEP	Environmental Impact Branch Marine			2100 2nd Street, SW	Washington	DC	20593	
FED	U.S. DEPT. OF ENERGY	DIR, OFFICE OF NEPA POLICY & COMPLIANCE			1000 INDEPENDENCE AVE., SW Mail Code EH-42, R	WASHINGTON	DC	20585	
FED	U.S. DEPT. OF INTERIOR	DIR, OFFICE OF ENV.POLICY & COMPLIANCE			MS-2340 1849 C ST., NW	WASHINGTON	DC	20240	
FED	U.S. ENVIRONMENTAL PROTECTION AGENCY, REGION 5	EIS REVIEW COORDINATOR			75 HAWTHORNE STREET	SAN FRANCISCO	CA	94105	
FED	U.S. FISH AND WILDLIFE SERVICE		DELLA	SNYDER	2493 PORTOLA RD., STE. B	VENTURA	CA	93003	
FED	U.S. Fish and Wildlife Service, Ventura Office	Administrative Officer/Division Chief, Administrative & Information Management Division	Deborah	Eidson	2493 Portola Road, Suite B	Ventura	CA	93003	
ELECT	U.S. House of Representatives	Congressman	Kevin	McCarthy	Longworth House Office Building, Room 1523	Washington	DC	20515	
ELECT	U.S. House of Representatives	Congressman	Howard "Buck"	McKeon	Rayburn House Office Building, Room 2351	Washington	DC	20515	
FED	U.S. Navy, Environmental Protection Division	Office of Chief of Navy Operations			ATTN: OP-45	Washington	DC	20350	
ELECT	United States Senate	Senator	Barbara	Boxer	Hart Senate Office Building, Room 112	Washington	DC	20510	
ELECT	United States Senate	Senator	Diane	Fienstein	Hart Senate Office Building, Room 331	Washington	DC	20510	
FED	US DOI	OFFICE OF REGIONAL SOLICITOR	ERICA	NIEBAUER ESQ	2800 COTTAGE WAY RM E1712	SACRAMENTO	CA	95825	
FED	US DOT INS		GREGORY	WARD	24000 AVILA RD	LAGUNA NIGUEL	CA	92607	
FED	US ENVIRONMENTAL PROTECTION AGENCY	ATSDR	WILLIAM	NELSON I	75 HAWTHORNE ST STE 100, MS HHS 1	SAN FRANCISCO	CA	94105	
FED	USDA APHIS PPD/EAD	Deputy Director			4700 River Road, Unit 149	Riverdale	MD	20737-1238	
FED	USDA Forest Service, Angeles National Forest	Acting Forest Supervisor	Marty	Dumpis	701 No. Santa Anita Avenue	Arcadia	CA	91006	
FED	USDA Forest Service, Angeles National Forest	Special Use Coordinator	Justin	Seastrand	701 No. Santa Anita Avenue	Arcadia	CA	91006	
FED	USDA Forest Service, Angeles National Forest	Project Manager	Robert	Hawkins	154 Sherwood Ct.	Vacaville	CA	95687	
FED	USDA Forest Service, Angeles National Forest, Santa Clara M	District Ranger	Bob	Blount	28245 Avenue Crocker, Suite 220	Valencia	CA	91355	
FED	USDA Forest Service, San Bernardino-National Forest	Forest Supervisor	Jeanne	Wade Evans	602 South Tippecanoe Avenue	San Bernardino	CA	92408	
FED	USDA, National Agricultural Library	Head, Acquisitions & Serials Branch			10301 Baltimore Blvd., Room 002	Beltsville	MD	20705	
FED	USDI Bureau of Land Management, California Desert District	NEPA Coordinator	Lynnette	Elser	22835 Calle San Juan De Los Lagos	Moreno Valley	CA	92553	
FED	USDI Bureau of Land Management, Ridgecrest Field Office	Field Office Manager	Hector	Villalobos	300 S. Richmond Road	Ridgecrest	CA	93555	Hector_Villalobos@ca.blm.gov
FED	USDI Bureau of Land Management, Ridgecrest Field Office	Supervisory Geologist	Linn	Gum	300 S. Richmond Road	Ridgecrest	CA	93555	Hector_Villalobos@ca.blm.gov
Repository	VALENCIA LIBRARY	HEAD LIBRARIAN			23743 W. VALENCIA BLVD.	Santa Clarita	CA	91355	
CITY	West Valley County Water District		Sharon	Jimenez	855 Base Line Road P.O. Box 920	Rialto	CA	92377	
CITY	Westside Union School District	Superintendent	Regina	Rossall	41914 No. 50th Street West	Quartz Hill	CA	93536	
FED	US Dept of the Interior, Office of the Solicitor, MS 5530		Michael C.	Hickey	1849 C St. N.W.	Washington	DC	20240	
FED	Office of the Solicitor, Pacific Southwest Region	Assistant Regional Solicitor	B. Demar	Hooper	2800 COTTAGE WAY RM E1712	Sacramento	CA	95821	
FED			Sandra	McGinnis	2800 Cottage Way Suite W-1623	Sacramento	CA	95825	
FED	USDI Bureau of Land Management, CaliforniaState Office								
FED	USDI Bureau of Land Management, WO-210, Planning & NEPA Branch	Planning & Env. Analyst	Sam	Gaugush	1849 C Street NW, Rm. 5665	Washington	DC	20240	
FED	Denver Library, Denver Federal Center Bldg. 50				P.O. Box 25047	Denver	CO	80225-0047	
CITY	William S. Hart Union High School District	Superintendent	Jaime L.	Castellanos	21515 Centre Points Parkway	Santa Clarita	CA	91350	jcastell@hartdistrict.org

APPENDIX Q: AVIAN PROTECTION PLAN

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July 2011

LOS ANGELES DEPARTMENT OF WATER AND POWER

Barren Ridge Renewable Transmission Project *Avian Protection Plan*

PROJECT NUMBER:
121085

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Barren Ridge Renewable Transmission Project
Avian Protection Plan

PREPARED FOR: LOS ANGELES DEPARTMENT OF WATER AND POWER

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1.0 INTRODUCTION

The following Avian Protection Plan (APP) has been designed to protect resident and migrating avian species that may be placed at risk from construction of the Los Angeles Department of Water and Power's (LADWP) Barren Ridge Renewable Transmission Project (BR RTP, Project). This APP has been developed consistent with the Avian Power Line Interaction Committee's (APLIC) principles of avian protection (APLIC 2005) to support LADWP's commitment to avian safety and compliance with the Migratory Bird Treaty Act of 1918 (MBTA, 16 U.S.C. 703 – 712), the Bald and Golden Eagle Protection Act of 1940 (BGEPA, 16 U.S.C. 668 – 668d), and the Endangered Species Act of 1973, as amended (ESA, 16 U.S.C. 1531 – 1544). It will outline plans, methods, and requirements to ensure that birds are protected during the construction of BR RTP.

Transmission structures present significant dangers to avian species (APLIC 2006). Birds nesting on structures may face increased risk of electrocution and collision if adjacent structures are not avian-safe, or if the area has a high density of existing transmission wires. Nests may also be more susceptible to damage from the elements, especially wind, if they are constructed on open poles, such as those used for distribution lines, or structures without either dense latticework or nesting platforms. Such risks also become costly to the utility company because of the risk of outages due to electrocutions, contact of nesting material with wires, prey falling on live equipment, contamination due to streamers (feces), and collisions with conductors. It is estimated that up to one billion human-related bird fatalities occur each year in the United States (Erickson et al. 2005). Of these, up to 174 million deaths nationwide are estimated to be from electrocutions and collisions with transmission structures (Erickson et al. 2001), hundreds of thousands attributable to the state of California alone (Hunting 2002).

This APP has been written with consideration to and guidance from the data and suggestions presented in APLIC's *Mitigating Bird Collisions with Power Lines: The State of the Art in 1994* (APLIC 1994), *Avian Protection Plan Guidelines* (APLIC 2005) and *Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006* (APLIC 2006). In addition, existing information on bird use in the Project area has been combined with new Project-specific survey information to effectively address avian safety specific to the construction of BR RTP. The protective measures and methods described in this document are consistent with Project mitigation measures developed for the Project's Environmental Impact Statement/Environmental Impact Report to reduce impacts to migratory birds, bald and golden eagles, and listed avian species.

1.1 PROJECT DESCRIPTION

The BR RTP would be located in Kern and Los Angeles counties. As proposed by LADWP, it would be approximately 76 miles in length extending from the Barren Ridge Switching Station to Rinaldi Substation, and extending approximately 12 miles from the Castaic Power Plant to the proposed Haskell Canyon Switching Station (Figure 1). The proposed BR RTP would include the following:

- (1) Construction of 61 miles of a new double-circuit 230 kilovolt (kV) transmission line from the Barren Ridge Switching Station to a new switching station located within Haskell Canyon. Approximately 13 miles of National Forest System (NFS) lands, four miles of BLM-managed public lands, and 45 miles of private property would be traversed.
- (2) Addition of approximately 12 miles of a new 230 kV circuit on the existing double-circuit structures from Haskell Canyon to the Castaic Power Plant. Approximately four miles would traverse NFS lands, and 300 feet would traverse BLM-managed lands.
- (3) Reconductoring of 76 miles of the existing Barren Ridge-Rinaldi (BR-RIN) 230 kV transmission line with larger capacity conductors between the Barren Ridge Switching Station and Rinaldi Substation. Approximately 13 miles of NFS lands, four miles of BLM-managed public lands, and 60 miles of private property would be traversed.
- (4) Construction of a new switching station in Haskell Canyon.
- (5) Expansion of the existing Barren Ridge Switching Station.

FIGURE 1. PROPOSED ACTION MAP



2.0 APPLICABLE LAWS AND REGULATIONS

2.1 FEDERAL

2.1.1. Migratory Bird Treaty Act

In the United States, 836 migratory birds native to the United States or its territories are protected under the Migratory Bird Treaty Act (MBTA) of 1918 (16 United States Code 703-712). The MBTA includes provisions outlined in four separate treaties between the United States and Canada (represented at the time by Great Britain), Mexico, Japan, and Russia that provide for the protection of migratory birds. It prohibits the act of “taking” birds, wherein the word “take” is defined as “to pursue, hunt, shoot, wound, kill, trap, capture, or collect,” or to attempt any of these actions, without specific authorization from the Secretary of the Interior. Because the MBTA is a strict liability statute, proof of intent is not required when categorizing a “take” violation. The MBTA also applies to the import, export, shipment, transport, or carrying of any migratory bird or their parts, nests, or eggs.

While the MBTA has no provision for allowing unauthorized take, it must be recognized that some birds may be killed at structures such as transmission lines even if all reasonable avoidance measures have been implemented. The U.S. Fish and Wildlife Service (USFWS) Office of Law Enforcement carries out its mission to protect migratory birds not only through investigations and enforcement, but also through fostering relationships with individuals and industries that proactively seek to eliminate their impacts on migratory birds. While it is not possible under the MBTA to absolve individuals, companies, or agencies from liability if they follow these recommended guidelines, the Office of Law Enforcement and Department of Justice have used enforcement and prosecutorial discretion in the past regarding individuals, companies, or agencies who have made good faith efforts to avoid the take of migratory birds. A violation of the MBTA by an individual can result in a fine of up to \$15,000 and/or imprisonment of up to six months for a misdemeanor, and up to \$250,000 and/or imprisonment for up to two years for a felony. Fines are doubled for organizations.

2.1.2. Endangered Species Act

In addition to the MBTA, some birds in the United States are protected by the Endangered Species Act (ESA) of 1973 (16 U.S.C. 1531-1544, as amended). The ESA protects federally listed threatened or endangered species and their habitats from unlawful take, where “take” is defined as “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.” It also prohibits the illegal import, export, carrying, transport, or shipment of any listed species without authorization from the Secretary of the Interior. With a submitted conservation plan, the Secretary may permit exceptions for scientific purposes, the propagation or survival of the affected species, or for instances where “taking is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity.” Violations of the ESA can result in civil penalties of up to \$25,000 for each violation or, for criminal violations, a penalty of up to \$50,000 or imprisonment for up to one year, or both.

2.1.3. Bald and Golden Eagle Protection Act

Bald and golden eagles are further protected by the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668C). This prohibits the unlawful take of any bald or golden eagle, where the word “take” is defined as to “pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb.” Taking, participating in the exchange of, or in any way transporting any bald eagle, alive or dead, or any part, nest, or egg of these eagles is punishable by a penalty up to \$5,000 or imprisonment up to one year, or both, for the first offense. The second and subsequent offenses are punishable by a penalty up to \$10,000 or imprisonment up to two years, or both. First-time violators of the “take” provision above may be fined up to \$100,000 and/or imprisoned up to one year, and subsequent violations may result in a fine of up to \$250,000 and/or two years imprisonment.

2.2 STATE

2.2.1. California Statutes

In the state of California, birds may be further protected by the California Endangered Species Act (CESA) (California Department of Fish and Game [CDFG] Code Sections 2050-2097); special provisions for take or destruction of bird nests or eggs and, in particular, raptor nests or eggs (CDFG Code Sections 3503-3503.5); state extension of the MBTA and fully protected species clauses (CDFG Code Section 3511-3513); and, to a lesser degree, the California Environmental Quality Act (CEQA) (Public Resources Code 21000-21177). Penalties for violation of these laws vary, but can result in fines of up to \$10,000.

CESA provides for the protection of State-listed threatened and endangered species against unlawful take, where "take" means to "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." It also prohibits the import, export, possession, or sale of any State-listed species. Exceptions may be granted through authorization by CDFG, or when the United States Secretary of the Interior or Commerce permits take, upon notification of the CDFG director. No exceptions may be granted for the take or possession of fully protected birds except for necessary scientific research or species recovery.

3.0 AVIAN INTERACTION ISSUES

3.1 AVIAN ELECTROCUTIONS

Each year, power line electrocutions cause the death of many large-bodied, vulnerable, and endangered avian species (Sergio et al. 2005). California condors fall into all three of these categories and are the largest bird in the Project area. There are 12 documented cases of California condors being killed by power lines. Ten of these cases were the result of interactions with distribution lines. Only two were from transmission lines (USFWS 2010).

Electrocution may occur because of a combination of biological and electrical design factors (Janss and Ferrer 2001). Biological factors are those that influence avian use of poles, such as habitat, prey, and species. Raptors in particular may be more likely to use poles because they are able to use them for perch-hunting, an energy-saving foraging behavior utilized by many species (APLIC 2006). Raptors and other types of birds will use poles and towers for nesting, especially in open areas or areas with low vegetation where there may not be many natural nesting locations (Bevanger 1994, APLIC 2006). Likewise, there is evidence to suggest that the design of transmission lines and pylons is important in determining the risk of death from electrocution (Janss 2000).

The electrical design factor most crucial to avian electrocutions is the physical separation between energized and/or grounded structures, conductors, hardware, or equipment that can be bridged by birds to complete a circuit (APLIC 2006). Energized components would typically consist of phase conductors, while grounded components could include overhead static wires, neutral conductors, grounding conductors, grounded metal braces, or other pole or tower components. It appears that electrocutions are less common on transmission line towers, because line spacing is at a sufficient distance to lessen the chance of birds completing the electrical circuit (Dorin and Spiegel 2005). High mortality rates are associated with structures that have conductors situated over the crossarms (Janss and Ferrer 2001, Ferrer et al. 1991); Ferrer et al. (1991) found that the least dangerous structures possess insulators below the crossarms. Electrical transmission lines tend to electrocute avian species when the animal touches two conductors, or a positive conductor and a ground, at once, especially if the feather area is wet (Bevanger 1998). Hence, body size and behavior, such as perching and roosting on poles or wires, are the keys to understanding why and how birds become electrocuted. Species frequently affected by electrocution seem to include birds of prey, ravens, and thermal soarers (Bevanger 1998). The majority of raptor electrocutions are caused by power lines that are energized at voltage levels of 69 kV and below, whereas "the likelihood of electrocutions occurring at voltages greater than 69 kV is extremely low" (APLIC 2006).

Electrocutions are largely due to the bird perching on conductors and/or insulators and coming in contact with the energized conductor and grounded insulator base or bonding conductor. While wet feathers may raise the risk of electrocution for a bird by increasing conductivity, dry feathers provide insulation, meaning that in most cases birds are electrocuted when they bridge two energized pieces, or an energized and grounded piece, of equipment with conductive fleshy parts such as the feet, mouth, bill, or wrists (APLIC 2006). Research has demonstrated that skin-to-skin contact is approximately ten times more dangerous to birds than the amperages conducted by contact between conductors and wet feathers, and approximately 100 times more dangerous than the conductivity between conductors and dry feathers (APLIC 2006). Wet feathers can conduct dangerous amperages beginning at around 5 kV, whereas dry feathers require currents greater than 70 kV before they will begin conducting current. High winds increase the problem by reducing the amount of control that birds have over their flight and landing patterns and increasing the risk that they will collide with transmission lines or accidentally bridge two components on a transmission structure and become electrocuted.

3.2 BIRD COLLISIONS

Similar to electrocutions, transmission line collisions are also a major factor in avian mortality along utility corridors. Factors that influence collision risk can be divided into three categories: those related to biology, those related to the environment, and those related to the configuration and location of transmission lines (APLIC 2006, Savereno et al. 1996).

3.2.1. Biological Factors Related to Bird Collisions

Biological factors include habitat use, body size, flight behavior, age, sex, and flocking behavior. In general, construction of transmission lines and structures in ecologically sensitive areas, such as wetlands, should be avoided. Wetlands tend to have a high concentration of birds nesting, feeding, roosting, and migrating back and forth, and add to the collision risk if transmission lines are nearby (Bevanger 1994). Construction in areas within the range of special-status species with a high documented collision risk, such as the California condor, should also be avoided. A total of seven deaths from 1993 to 2001 have been reported by USFWS (2009) as a result of collision with transmission lines. These mortalities were determined to be caused by collision with transmission lines by injury characterization (as determined by necropsy) and proximity to transmission lines. One of these deaths occurred at an existing line that would be adjacent and parallel to the new 230 kV circuit (Gibson 1993).

Many birds, especially raptors, will use transmission poles and towers as perches. This can conserve energy by lowering the amount of time dedicated to flying as the birds search for prey below (APLIC 2006). Bird species that spend an abundance of time in the air may face a greater risk than those that are predominantly ground-based (Bevanger 1994). For example, predators that fly at high speeds when tracking prey, such as peregrine falcons or goshawks (*Accipiter gentilis*), may be more likely to collide with a power line. A bird's flight performance has been shown to be one of the most important factors determining the chances of collision with a transmission line, perhaps more important than the sheer frequency of birds flying near the lines (Janss 2000). Juvenile birds, which are not as familiar with the surrounding area and are less experienced in both flight and, in the case of raptors, hunting methods, can be expected to have greater likelihoods of colliding with transmission lines (Bevanger 1994, Bevanger 1998, Dorin and Spiegel 2005). However, larger birds, such as the California condor, also tend to be more likely to collide with power lines.

3.2.2. Environmental Factors Related to Bird Collisions

Environmental factors influencing collision risk include the effects of weather and time of day for transmission line visibility, surrounding land use practices that may attract birds, and human activities that may flush birds into transmission lines. Overcast weather or thick fog tend to cause birds to lower

their flying altitudes. Likewise, headwinds generally cause birds to fly lower, whereas tailwinds may cause birds to fly higher (Bevanger 1994, Perdeck and Speek 1984). High winds may cause some species, especially waterfowl, to fly at lower elevations, increasing collision risk (Hunting 2002). If winds are blowing perpendicular to the wires, this can increase collision possibility even further (Hunting 2002). A previous study of avian migrants found that the lowest daily number of migrants was recorded on a day where the average wind speed was 15.5 miles per hour (mph) (Pope et al. 2006). If wind speeds become too strong, thermal formation may be disrupted, reducing the amount of migration through an area. Additionally, excessive cloud cover may also limit ground heating, reducing thermal wind formation and potentially causing a decline in migration of species that predominantly rely on thermals for movement, such as raptors (Pope et al. 2006). Depending on the visibility due to the aforementioned weather conditions or other factors such as rain, fog, or snow, transmission lines may be more difficult to see, increasing the likelihood of a collision (Mathiasson 1992). Visibility can also be affected by the time of day. Lines become increasingly difficult to see at times with poor lighting, such as night, dawn, or dusk, which may pose a greater risk to migratory species because they are not necessarily as familiar with a particular region as resident species. One study found that, during observations of waterfowl flights across a transmission line, out of 433 strikes, 432 occurred at night or during poor weather (Hunting 2002). A similar study at the Lake Sangchris-Kincaid Power Plant in Illinois found that only one in 250,000 waterfowl collided with the power lines during the day (Anderson 1978). Further studies by Stout and Cornwell (1976) also emphasize the risk that poor visibility poses to waterfowl in the midst of power lines.

Wetlands, lakes, and streams are all potential “hot spots” for avian risk due to power lines. Because water is often used by birds to forage or congregate, adjacent power lines can pose collision risks to birds that are not aware of their presence or cannot see them. Stout and Cornwell (1976) found that in a review of reported non-hunting mortality of wild waterfowl from 1930 to 1964, 65% of collision mortalities were due to telephone and power lines. A study of migrating mute swans on the coast of Sweden found that, out of 54 swan flocks recorded during the observation period, six flocks had difficulty—but no collisions—crossing power lines, and four mortalities were observed by locals during the same period (Mathiasson 1992). Anderson (1978) postulated that the five factors that most influence waterfowl collision frequency with power lines are: 1) the number of birds present; 2) visibility; 3) species composition and behavior; 4) disturbance; and 5) familiarity with the area. Mathiasson (1992) determined that in his study, the rate of collisions was “mainly a factor of swan frequency and behaviour, and positioning of the wires in the landscape [sic].” Larger water bodies would theoretically attract more birds, and the more birds that are present, the higher the potential to have a collision with power lines. If birds are startled into leaving a water body adjacent to power lines, or are attempting to fly through the area at night when visibility is very poor, especially if they are unfamiliar with the area’s vertical spatial layout, the likelihood of a bird flying into one of the lines increases. Therefore, aquatic areas are a determining factor in the risk to avian species.

Anthropogenic land use may attract or push birds into areas that contain transmission lines. A simple stretch of highway, for instance, may be an attractive area to vultures or similar species because of the sheer amount of roadkill that is created. Agriculture may attract birds foraging in the vegetation or raptors foraging for crop pests. Relatively dense building clusters may push birds into areas with transmission lines because of the flight obstacles.

3.2.3. Line-related Factors Related to Bird Collisions

Line-related factors include the configuration and location of the transmission line and transmission line placement with respect to other structures or topographic features. While it is believed that flat-line configurations are less of an avian risk than vertical configurations (Bevanger 1994), power line structure design has not been sufficiently demonstrated to suggest a specific correlation with bird collisions (Janss 2000). However, there seems to be a positive relationship between the presence of a static wire and the number of bird collisions (Bevanger 1994, Savereno et al. 1996). It is thought that, in many cases, the bird

sees the conductor wires, changes its altitude to avoid them, and subsequently collides with the thinner, less-visible static wire instead. Consequently, studies have demonstrated an average mortality decline of 50 to 60% when markers are placed on static wires in relation to when wires are left unmarked (Savereno et al. 1996).

Transmission line location can also play an important role in the risks imparted to birds. Generally, there is more of a risk in placing a transmission line corridor in an open area than against an existing backdrop (Bevanger 1994). The risks to birds flying across a single corridor in an open space become dependent not only on the line's visibility, but on the altitude of the bird and its ability to first see the intruding wires, and then change its flight pattern to avoid them. On the other hand, lines that are placed against existing lines or against a landscape reference are theoretically easier to avoid. Multiple lines going through one corridor prevent birds from having to continually change their flight patterns, allowing them to instead avoid several sets of lines all at once. Similarly, lines placed along the base of a cliff, a row of trees, a building, a bridge, or a similar barrier will theoretically help avoid collisions because birds are forced to change their altitude to avoid the impediment (Bevanger 1994). The simple parallel or perpendicular placement of transmission line corridors relative to avian flyways is also an influence on the risk that the lines pose. There tends to be a greater risk in putting lines in between areas necessary for life history, such as foraging and roosting, especially if the two areas are separated by a short distance (Bevanger 1994). If a line is placed near a ridgeline, the risk to avian species can increase. When horizontal winds get deflected upward by ridgelines, the resulting updrafts get used by raptors to gain elevation for gliding purposes. Raptors will also use thermals, which can rise to hundreds or thousands of meters, for gliding purposes (Pope et al. 2006). Lines that are placed near ridgelines can pose collision risks to birds that may be using updrafts or thermals in their migratory paths and may not see the transmission lines in time to maneuver out of the way. Alternatively, canyons or valleys may act as funnels for migrating birds, and can pose collision risks if lines cross perpendicular to the natural direction of flight. Research suggests that wind turbines placed near gullies may pose higher risks to birds passing through (Thelander and Rugge 2000). It may be reasonably assumed that transmission towers, poles, or lines pose a similar risk. If water is present, the issue may become further complicated because more birds have the potential to be attracted to the area as they are migrating through.

Bird collisions also tend to occur with transmission lines when migrant species travel at reduced altitudes near tall structures, such as transmission lines and towers. It is difficult to predict the magnitude of collision-caused bird mortality without extensive information on bird species and movements in the Project vicinity. This data is not available for the proposed transmission line study area; however, it is generally expected that collision mortality would be greatest where the movements of susceptible species are the greatest (e.g., near open bodies of water, wetlands, ridgelines), such as Castaic Reservoir. A portion of this area already supports existing transmission lines. It is possible that birds would strike the new transmission lines, but it is not expected to result in a substantial increase from current conditions due to the existing transmission lines. Because the new 230 kV circuit would be placed on existing towers, construction of this portion of the Project would not result in changes to tower heights or increased vertical obstacles.

3.3 SPECIAL-STATUS AVIAN SPECIES POTENTIALLY OCCURRING WITHIN THE PROJECT AREA

Because nearly all avian species in the United States have protection under the Migratory Bird Treaty Act, avian species that have other state or federal levels of protection besides the MBTA are referred to as "special-status" to denote their extra levels of protection. Table 1 summarizes the special-status avian species that may occur within the Project area, including their regulatory statuses, habitat requirements, and potentials to occur within the individual components of the Project. Species occurrence potentials were determined according to the following criteria:

- **Absent (A):** Species or sign not observed on the site, outside of the known range, and conditions unsuitable for occurrence.
- **Unlikely (U):** Species or sign not observed on the site, but conditions marginal for occurrence.
- **Possible (Po):** Species or sign not observed on the site, but conditions suitable for occurrence and/or an historical record exists in the vicinity.
- **Likely (L):** Species or sign not observed on the site, but reasonably certain to occur on the site based on conditions, species ranges, and recent records.
- **Present (Pr):** Species or sign of their presence recently observed on the site.

TABLE 1. SPECIAL-STATUS AVIAN SPECIES WITH POTENTIAL TO OCCUR WITHIN THE PROPOSED ACTION AREA

Species	Scientific Name	Regulatory Status			Habitat Requirements	Potential to Occur – Proposed Action		
		Federal	State	Other		New 230 kV Transmission Line	New 230 kV Circuit	Reconductoring
Northern Goshawk	<i>Accipiter gentilis</i>	FSS		CDFG SC	In or near coniferous forests. Nests constructed on north slopes near water in red firs, lodgepole pines, Jeffrey pines, and aspens.	A	A	A
Golden Eagle	<i>Aquila chrysaetos</i>			CDFG FP, CDFG WL, USFWS BCC	Nests in cliffs or large trees, typically in mountainous regions and in the vicinity of open grassland or oak savanna habitat. Forages in areas of open habitat.	Pr	A	Pr
Burrowing Owl	<i>Athene cunicularia</i>			CDFG SC, USFWS BCC	Lowlands throughout California, including the Central Valley, northeastern plateau, southeastern deserts, and coastal areas. Uses rodent burrows in sparse grassland, desert, and agricultural habitats.	L	A	L
Swainson's Hawk	<i>Buteo swainsonii</i>		ST	USFWS BCC	Breeds in grasslands with scattered trees, juniper-sage flats, riparian areas, savannahs, agricultural areas, and ranches. Requires adjacent suitable foraging areas such as grasslands, or alfalfa or grain fields supporting rodent populations.	Po	A	Po
Western Yellow-Billed Cuckoo	<i>Coccyzus americanus occidentalis</i>	FC	SE	USFWS BCC	Riparian forest nester, along the broad, lower flood-bottoms of larger river systems. Nests in willow and cottonwood forest, with understory of blackberry, nettles, or wild grape.	Po	A	Po
Southwestern Willow Flycatcher	<i>Empidonax traillii extimus</i>	FE	SE		Riparian woodlands in Southern California.	Po	A	Po
Peregrine falcon	<i>Falco peregrinus</i>	Delisted	SE	CDFG FP, USFWS BCC	Near wetlands, lakes, rivers, or other water; on cliffs, banks, dunes, mounds, and man-made structures. Nest consists of a scrape on a depression or a ledge in an open site.	Po	Po	Po
California Condor	<i>Gymnogyps californianus</i>	FE	SE		Requires vast expanses of open savannah, grass savannah, grasslands, and foothill chaparral in mountain ranges of moderate altitude. Microhabitat consists of deep canyons with rocky walls for nesting sites. Forages up to 150 miles from roost/nest.	Po	Pr	Pr

Species	Scientific Name	Regulatory Status			Habitat Requirements	Potential to Occur – Proposed Action		
		Federal	State	Other		New 230 kV Transmission Line	New 230 kV Circuit	Reconductoring
Bald Eagle	<i>Haliaeetus leucocephalus</i>	Delisted	SE	CDFG FP	Ocean shore, lake margins, and rivers for both nesting and wintering. Most nests are within one mile of water. Nests in large, old-growth or dominant live trees with open branches, especially Ponderosa pine. Roosts communally in winter.	A	Po	A
Loggerhead Shrike	<i>Lanius ludovicianus</i>			CDFG SC, USFWS BCC	Open space with patchy shrubs and trees, including desert scrub, agricultural areas, pastoral habitat, and suburban areas.	Pr	Po	Pr
Coastal California Gnatcatcher	<i>Poliophtila californica californica</i>	FT		CDFG SC	Obligate, permanent resident of coastal sage scrub below 2,500 feet in Southern California. Low, coastal sage scrub in arid washes, on mesas and slopes. Not all areas classified as coastal sage scrub are occupied.	A	Pr	Pr
California Spotted Owl	<i>Strix occidentalis occidentalis</i>	FSS		CDFG SC, USFWS BCC	Mixed conifer forest, often with an understory of black oaks and other deciduous hardwoods. Canopy closure greater than 40%. Most often found in deep-shaded canyons, on north-facing slopes, and within 300 meters of water.	Po	Po	Po
Least Bell's Vireo	<i>Vireo bellii pusillus</i>	FE	SE	USFWS BCC	Summer resident of Southern California in low riparian in vicinity of water or in dry river bottoms, below 2,000 feet. Nests placed along margins of bushes or on twigs projecting into pathways, usually willow, <i>Baccharis</i> , mesquite.	Po	Pr	Po

Listing Status:

U.S. Fish and Wildlife Service (USFWS)

FE = listed as Endangered under ESA

FT = listed as Threatened under ESA

FC = Candidate for listing under ESA

BCC = Bird of Conservation Concern

Delisted = Formerly listed under ESA

US Forest Service (USFS)

FSS = Forest Service Sensitive

California Department of Fish and Game (CDFG)

SE = listed as Endangered under CESA

ST = listed as Threatened under CESA

SC = listed as Species of Concern

FP = listed as Fully Protected under CDFG Code

4.0 AVIAN PROTECTION PLAN COMPONENTS

The following section describes APP components and how they pertain to the construction of the BR RTP. There are twelve components to an APP, as determined by APLIC (2005):

- Corporate policy
- Training
- Permit compliance
- Construction design standards
- Nest management
- Avian reporting system
- Risk assessment methodology

- Mortality reduction measures
- Avian enhancement options
- Quality control
- Public awareness
- Key resources

Not all APPs will contain information about all twelve components, as each document will be specific to the utility and its needs. The components outlined below provide background information where appropriate on how each component is relevant to the BRRTP and how it will be implemented. At the end of each component, where applicable, a summary is provided to give a clear statement of what actions LADWP will take to ensure avian safety during the BRRTP's construction.

4.1 LADWP AVIAN PROTECTION POLICY

The Los Angeles Department of Water and Power recognizes that not only can avian interactions and collisions with its facilities cause bird injuries or deaths, but that they can cause utility outages, raise utility rates, result in fires in adjacent areas, or lead to strained relationships between LADWP and overseeing resource agencies or the general public. As such, LADWP is committed to protecting avian species that occur within the vicinity of its projects, structures, and complexes. The responsibility of effectively protecting avian species and minimizing avian risk at its facilities lies both with LADWP management and with its employees.

To this end, LADWP will:

- Implement and comply with this Avian Protection Plan (APP);
- Ensure that its actions comply with the most recent applicable laws, regulations, permits, APP procedures, and any applicable APLIC guidelines that may be updated in the future;
- Document bird mortalities; problem poles, towers, or lines; and problem nests;
- Provide information, resources, and training to improve its employees' knowledge and awareness of the APP;
- Retrofit any poles or towers that appear to be problem spots for avian safety, or where a protected bird species has been killed; and
- Participate in or sponsor research or development furthering avian power line interaction safety, and incorporate any new advancements that develop as a result of this research, as applicable to LADWP power lines or transmission structures.

4.2 TRAINING

LADWP project management, supervisors, construction crews, and contractors will undergo avian protection awareness training prior to construction on BRRTP. Ensuring that Project personnel are knowledgeable and aware of the protocols and methods outlined in this APP will decrease the likelihood of dangerous avian interactions and increase the likelihood of quick and efficient responses to incidents. All BRRTP on-site Project personnel will undergo a Worker Environmental Awareness Program (WEAP) that places emphasis on LADWP's avian protection policy (described above in Section 4.1, LADWP Avian Protection Policy), any Project permits that may be issued for avian protection, special-status avian species that could occur during construction and where they would be most likely to occur, how to identify these species, their natural histories where relevant to local construction activity, what construction measures and best management practices to employ to ensure their safety, and what steps to take should an avian injury or mortality occur—including carcass disposal protocol—or should a bird nest be discovered within 500 feet of the general construction area. Training will also include a discussion of the law and the consequences for non-compliance with this APP and/or with applicable permits or regulations. All new construction personnel will be required to undergo WEAP training prior to starting

work on BRRTP. For a more explicit discussion of how newly discovered nests or avian incidents will be reported, see Section 4.5, Nest Management, and Section 4.6, Avian Reporting System, respectively.

Summary

- All LADWP Project-related management, supervisors, crew members, and contractors will undergo an avian protection awareness training prior to the start of construction.
- All LADWP on-site personnel will undergo WEAP training with emphasis on avian protection prior to the start of construction.
- All new construction personnel will undergo WEAP training before they begin work.

4.3 PERMIT COMPLIANCE

LADWP and its Project personnel, including contractors, will at all times attempt to remain in compliance with applicable avian permits that may be issued for the construction of BRRTP. Should construction be found to be out of compliance with a Project permit, LADWP Environmental Services staff will be notified so that the non-compliance can be documented with the appropriate resource agency and appropriate remedial actions can be taken.

The following permits may be applicable to the construction of the BRRTP. However, it is unknown which or how many of these would be required or issued for this Project. Currently, LADWP does not possess federal or State permits pertaining to migratory birds, eagles or federally listed avian species. It is not authorized to capture injured birds, remove inactive eagle or colonial bird nests, disturb active nests of any bird species, or remove or store carcasses. Any such activity will be conducted by the USFWS or under their direct supervision. This APP will be modified if LADWP obtains a permit in the future.

- **Incidental Take Permits** – Incidental take permits are issued to allow the take of specified individuals per the conditions within each permit.
 - **Section 7 Incidental Take Statement** – The only federally listed avian species known to be in the Project area that are at risk for collision or mortality are the California condor, coastal California gnatcatcher, and least Bell's vireo. Because of the voltage of the BRRTP transmission lines and the large separation distance that will be required, electrocution is highly unlikely. Based on 2008 and 2009 California condor tracking information provided by USFWS, this species is expected to be present or in the vicinity of the new 230 kV circuit and the lowermost portions of the reconductoring corridor, in the San Gabriel Mountains (USFWS 2008, USFWS 2009). Coastal California gnatcatchers were observed in the Project area near Castaic Lake during BRRTP bird use count surveys conducted by POWER Engineers, Inc. (POWER) in 2010 and 2011 and by POWER biologists on the southern end of the reconductoring component in the winter of 2009/2010. A population of least Bell's vireo was observed numerous times between Castaic Lake and Castaic Lagoon between April and July 2005. Because construction in these two areas will be on existing towers and not on new towers, LADWP will confirm that towers that are in the vicinity of documented condor activity sufficiently meet construction design standards applicable to this species as described in Section 4.4, Construction Design Standards. To reduce the risk of collision, LADWP will also implement markers to assist birds in detecting power lines, also described in Section 4.4. If it is determined that there is still an electrocution or collision risk to California condors—or to any other species that may become federally listed prior to construction—as a result of BRRTP's construction, LADWP may need to seek a Section 7 Incidental Take Statement which, if issued, would describe the amount of take of each applicable species that would be allowed.
 - **Bald and Golden Eagle Act Permit** – Based on known occurrences and activities in the vicinity of the Project area, it is not expected that a permit for take of bald or golden eagles will be necessary during BRRTP's construction. Should any eagle electrocution or collision

incidents occur during construction or should an eagle nest be discovered that will be impacted by construction, LADWP construction crews will carry out measures described in Section 4.5, Nest Management, and Section 4.6, Avian Reporting System, and immediately notify LADWP Environmental Services staff, who will in turn report the information to USFWS.

- **Section 2081 Permit** – These are incidental take permits for State-listed species, authorized by CDFG under Sections 2081(b) and (c) of the California Endangered Species Act. They are issued in circumstances where the take is incidental to an otherwise lawful activity; where impacts of the take are minimized and fully mitigated; where the mitigation measures are roughly proportional in extent to the impact, maintain the applicant's objectives to the greatest extent possible, and are capable of successful implementation; where adequate funding is available for implementation and monitoring of the mitigation measures; and where the permit will not jeopardize the species' continued existence. State-listed species that may be at risk of electrocution or collision during BR RTP's construction based on potential or known occurrence information include Swainson's hawk, peregrine falcon, California condor, and bald eagle. Where these species are at greater risk, LADWP will implement avian safety measures recommended in Section 4.4, Construction Design Standards, and will document incidents as described in Section 4.5, Nest Management, and Section 4.6, Avian Reporting System. These measures will be implemented on new and existing transmission lines as applicable based on known or possible occurrence information.
- **Collection/Salvage Permits** – These permits are required to collect, salvage, or handle birds.
 - **State Scientific Collecting Permit** – These permits are issued by CDFG and allow the collection, salvage, or capture and release of special-status species as allowed by the individual permit conditions. LADWP will seek this permit from CDFG if any of these actions is required during BR RTP's construction due to electrocution, collision, or other construction-related incidents.
 - **Federal Migratory Bird Permit** – These permits are issued by USFWS under the MBTA and may be required if it is necessary to salvage and/or rehabilitate birds protected by the MBTA during construction. The USFWS Pacific Southwest Region's Migratory Bird Office is located at the Pacific Southwest Regional Office in Sacramento, CA. CDFG Code 3513 also prohibits the take or possession of any migratory nongame bird protected by the MBTA, except where allowed by the Secretary of the Interior.
- **Nest Removal and Relocation Permits** – Bird nests are protected by the MBTA and by CDFG Code. Under the MBTA, it is illegal to possess, sell, purchase, barter, transport, import, export, or take—defined as collecting, for nests—or attempt any of those actions on a migratory bird nest (USFWS 2003). Under CDFG Code 3503 and 3503.5, it is illegal to take, possess, or needlessly destroy the nest or eggs of any bird, including any in the orders *Falconiformes* or *Strigiformes*, except as otherwise provided by CDFG Code or pursuant regulations. However, it is lawful to remove inactive nests or nests during the non-breeding season for most birds, excepting those of eagles and listed species. When it is necessary to remove a protected nest as dictated by the MBTA and CDFG Code, LADWP will seek permits from USFWS and CDFG prior to taking any further actions other than those described under Section 4.5, Nest Management.

4.4 CONSTRUCTION DESIGN STANDARDS

Constructing avian-safe transmission towers and poles is an integral part of safeguarding against avian electrocutions. The electrical design factor most crucial to avian electrocutions is the physical separation between energized and/or grounded structures, conductors, hardware, or equipment that can be bridged by birds to complete a circuit (APLIC 2006). APLIC recommends certain distances between energized and/or grounded parts of transmission towers and poles to minimize or avoid avian electrocutions. The recommended horizontal and vertical distances vary depending on what avian species may occur in a particular area. The standard horizontal distance recommended is 60 inches, which is expected to allow

adequate clearance for most birds to safely sit between phases or between a phase and a grounded piece of hardware (such as a wire or metal brace) under normal dry conditions. This distance is based on the calculated wrist-to-wrist distance of a large golden eagle (*Aquila chrysaetos*), which is projected to be approximately 54 inches for an eagle with a wingspan of 90 inches (subtracting an estimated 18 inches on each side for the outer primary feathers) (APLIC 2006). However, according to APLIC (2006), there is insufficient data to have a reliable average wrist-to-wrist distance for condors. Because condor wingspans can be between 98 and 118 inches (APLIC 2006), a horizontal separation of 72 inches is likely adequate to accommodate the wrist-to-wrist distance. On three-phase structures such as those being used for BRRTP, a minimum vertical separation of 43 inches between energized and grounded components is required. However, in areas where long-legged wading birds, such as great blue herons (*Ardea herodias*), may occur, APLIC recommends a minimum vertical separation distance of 48 inches (APLIC 2006).

In addition to adjusting the physical separation between energized conductors/hardware and grounded conductors/hardware, there are other methods of minimizing danger to avian species from transmission structures or reducing the likelihood of accidental outages or flashovers. Some insulation methods that can help minimize bird mortalities include phase covers, bushing covers, arrestor covers, cutout covers, jumper wire hoses, and covered conductors, as applicable. Apart from insulation, bird flight diverters such as spiral coils, marker balls, or swinging plates/flappers can be used to alert birds to the presence of obstacles in the air and hopefully minimize injuries or mortalities that may occur as a result of collisions. Yellow marker balls on a South Carolina transmission line contributed to a 53% reduction in bird strikes, while plastic dampers and yellow fiberglass square plates reduced mortalities by 61% and 63%, respectively, in southwestern Colorado (Manville II, 2005). Additional studies of the effectiveness of marked and unmarked power lines in reducing avian mortalities are cited in Erickson et al. (1999). It is recommended that LADWP consider the use of bird flight diverters on its new transmission lines in areas that are determined by BRRTP's avian risk assessment (described in Section 4.7, Risk Assessment Methodology) and by bird use count surveys conducted in 2010 and 2011 to be of elevated risk to native and migratory birds.

Additionally, some causes of electrical outages include conductor contact with nesting material (particularly in wet conditions), conductor-to-conductor contact caused by swaying lines after a large group of birds flushes from an area, prey falling onto energized conductors or hardware, contamination from bird feces, and bird collisions (APLIC 2006). While triangle, spike, cone, or wire perch discouragers can be used to try to deter birds from nesting in a certain area, studies have shown that these are not always successful and that birds may nest directly on top of perch discouragers due to their abilities to better hold nesting material (APLIC 2006). However, the successful use of perch discouragers also depends on the types of structures they are being used on and on their general configuration. Leaving a minimal amount of open space between conductors or between grounded and energized components will discourage birds from perching. Nesting platforms will be discussed in further detail in Section 4.9, Avian Enhancement Options.

4.4.1. New Structures

New towers for this Project are proposed over approximately 60 miles, spanning from the Angeles National Forest (ANF) at the proposed Haskell Canyon Switching Station and north into the Antelope Valley and Mojave Desert to the Barren Ridge Switching Station. The new transmission line will involve the construction of double- and triple-circuit towers and temporary tubular wood or steel poles, to be installed through the Green Valley portion of the Project while the existing transmission lines are shut down during construction. LADWP will verify that all new transmission towers and poles that are constructed for the BRRTP will have sufficient separation distances between all energized components and between energized and grounded tower components to be safe for birds as large as California condors. Because no precise wrist-to-wrist distance is available for California condors, it is determined that, based on their wingspan, a horizontal component separation distance of 72 inches throughout the Project area would likely be adequate. The vertical separation distance would be 48 inches to

accommodate for any long-legged wading birds. Due to the high voltage (230 kV) of the new towers and the separation requirements dictated by the National Electric Safety Code (NESC), the new structures should exceed these minimum separation distances. In the event that adequate component separation cannot be obtained on a particular tower configuration, LADWP will reconfigure the tower(s) or install avian-safe equipment, such as conductor covers. On the northern end of the Project, the Barren Ridge Switching Station will be expanded, and at the southern end of the ANF a new switching station will be constructed in Haskell Canyon. Because it is possible that birds may nest or perch on electrical equipment within these switching stations, LADWP will cover any electrical equipment within the new switching stations that may pose electrocution risks using phase covers, bushing covers, arrestor covers, cutout covers, jumper wire hoses, covered conductors, or other insulation methods, as applicable. This would apply particularly in any areas within the switching stations where energized components on equipment may be particularly close to each other or to any grounded components.

It is unlikely that construction of the new transmission line will appreciably increase collision risk for avian species due to the fact that there are multiple transmission lines running parallel to the proposed ROW. Because the new 230 kV transmission line runs primarily parallel to the existing transmission line that will be reconductored, if there is any information regarding bird collisions, injuries, or mortalities along the existing transmission lines, towers that are constructed in any problem areas (e.g., areas of repeat collisions, areas where eagles or listed species may be known to have been previously injured or killed) will be outfitted with collision reduction measures. Methods that can be utilized for this include relocating the new line, reconfiguring its design, removing any overhead ground wires (which tend to be less visible to birds and easier to collide with), and marking the lines to increase their visibility (APLIC 1994, APLIC 2006). Lines can be marked with marker balls, swinging plates, spiral vibration dampers, bird flight diverters, avifauna spirals, or other technology as it becomes available.

Following the completion of construction, LADWP will provide USFWS with a summary of the remedial measures that have been implemented to reduce or prevent avian injuries or mortalities on the new transmission lines where deemed necessary. This summary will include all costs of the remedial measures as documentation of LADWP's efforts to protect avian species. Photos may assist in displaying the efforts.

4.4.2. Existing Structures

In addition to the new structures being constructed for BRRTP, reconductoring or placement of a new circuit will occur on existing structures within the Project area. Existing towers in these areas include three-circuit towers, four-circuit towers, and DC towers. LADWP will verify that all existing Project-related transmission towers meet the 72-inch horizontal separation for California condors (described above) between all energized components and between all energized and all grounded tower components. Due to the high voltage (230 kV) of the existing towers and the separation requirements dictated by the NESC, it is expected that the existing structures will already meet this minimum separation distance. If they do not meet this distance, appropriate avian-safe equipment, such as conductor covers, will be installed as a remedial measure.

Although the existing towers that will be reconductored or will have new a new circuit installed on them likely already meet the minimum separation distances recommended by APLIC (2006) to reduce avian electrocutions, it is still possible that collisions could occur on them if they are already problem areas. It is unlikely that reconductoring the existing lines or adding a new circuit to the existing towers would significantly increase the risk of collision. During BRRTP's construction, LADWP will retrofit or otherwise make avian-safe any transmission towers that are in known problem areas or have been identified as potentially high risk areas for avian species by the methods outlined in Section 4.7, Risk Assessment Methodology. If information on bird collisions is available from the existing lines that will be worked on, this information will be used to determine areas that warrant further investigation of avian safety and may require retrofitting. It is expected that adding marker balls, swinging plates, spiral

vibration dampers, bird flight diverters, or other suitable types of equipment for making transmission lines more visible will alleviate any avian risk problems. Relocating or reconfiguring existing lines would likely be very expensive relative to increasing wire visibility and will be conducted only where other methods have failed.

Following the completion of construction, LADWP will provide USFWS with a summary of the remedial measures that have been implemented to reduce or prevent avian injuries or mortalities on the existing transmission lines if deemed necessary. This summary will include all costs of the remedial measures as documentation of LADWP's efforts to protect avian species. Photos may assist in displaying the efforts.

Summary

- LADWP will ensure that all new transmission towers will meet the recommended minimum 72-inch horizontal and 48-inch vertical separation distance between all energized and between all energized and all grounded tower components. LADWP will appropriately cover the energized and/or grounded components of any equipment in its switching stations or on its towers where perching or nesting birds may be at risk of electrocution.
- LADWP will ensure that all existing Project-related transmission towers meet the recommended minimum 72-inch horizontal and 48-inch vertical separation distance between all energized components and between all energized and all grounded tower components. Any towers that do not meet these distances will be retrofitted with conductor covers or other appropriate avian-safe equipment.
- LADWP will use any existing avian injury or mortality data to identify "problem areas" for electrocutions or collisions. Problem areas or other areas determined to be high risk will be retrofitted by covering any energized and/or grounded electrical components that may pose an electrocution risk, where applicable, installing marker balls or other bird flight diverters, and/or relocating or reconfiguring the existing lines if necessary.
- To document its costs and efforts to protect avian species, LADWP will provide USFWS with a summary of its implemented avian safety measures on its new and existing Project-related lines, including the costs of implementation (labor, materials, and management).

4.5 NEST MANAGEMENT

BR RTP construction will be scheduled to best avoid bird breeding season, which is generally from mid-February through August. If construction or vegetation removal is to occur during the breeding season, a qualified biologist will conduct preconstruction nesting bird surveys to determine if active nests of any bird species are present within the vicinity of construction. This is particularly important for any construction near riparian areas. All bird nests that are encountered during construction are to be documented using the nest reporting form below. All construction within 500 feet of an active nest is to be halted immediately until the condition of the nest can be ascertained as unobtrusively as possible. Under the MBTA, it is illegal to possess, sell, purchase, barter, transport, import, export, or take—defined as collecting, for nests—or attempt any of those actions on a migratory bird nest (USFWS 2003). While inactive bird nests—those without birds or eggs—are not protected from destruction by the MBTA, some inactive nests are protected by other regulations, including those of listed species or of bald and golden eagles. Nests of eagles or listed species cannot be altered, moved, or destroyed without specific authorization from the applicable agency (APLIC 2006). Recent legislation changes in 2009 allow take of eagle nests when there is a safety concern to people or eagles, when it is a public health and safety concern, when the nest prevents use of a human-engineered structure, or when the activity or its mitigation will have a net benefit to eagles; only inactive nests can be taken except in safety emergencies (50 CFR 22.27). However, permits are still required for nest removal and ground crews must notify Environmental Services if a problem nest is discovered. Therefore, determining the active or inactive status of a nest in the vicinity of construction is paramount to protecting the birds that may be occupying it and protecting BR RTP by ensuring smooth and avian-safe construction.

If there is question as to whether an observed nest is active or inactive, Environmental Services and the appropriate land management agency are to be consulted for assistance. Under no circumstances is an active nest to be disturbed until Environmental Services has been notified and applicable permits and/or resource agencies have been consulted for further action. The nest reporting form must be completed regardless of the active or inactive state of any nests. Construction may only proceed within the 500-foot nest buffer after the nest has been determined to be inactive or after approval has been given by Environmental Services or the applicable regulatory agency.

Should a nesting bald eagle be encountered during BRRTP's construction, USFWS has issued recommendations for avoiding or minimizing disturbance to the nest and its inhabitants (USFWS 2007). If the power line construction will be visible from the nest, USFWS recommends a buffer of 660 feet if there is no similar activity occurring within one mile of the nest; if a similar activity is occurring within one mile of the nest, USFWS recommends a construction buffer of 660 feet or as close as the other activity is allowed. Landscape buffers are recommended as available. Other activities that USFWS lists as having similar impacts to the construction of a power line include construction of one- or two-story buildings with footprints of a half-acre or less; construction of roads, trails, canals, or other linear utilities besides power lines; new or expanded agriculture and aquaculture operations; alteration of shorelines or wetlands; installation of docks or moorings; and water impoundment. If construction is not visible from the nest, USFWS recommends a buffer of 330 feet from the nest if there is no similar activity within one mile of the nest; if a similar activity is occurring within mile of the nest, USFWS recommends a construction buffer of 330 feet or as close as the other activity is allowed. All clearing, external construction, and landscaping between 330 and 660 feet of the nest should be conducted outside of the breeding season. USFWS recommends that the temporary use of loud machinery—such as is required for power line construction—be restricted to outside of the breeding season. While the breeding season for bald eagles can range from January through August, the most critical time periods when bald eagles are most sensitive to disturbance—courtship, nest building, egg-laying, and incubation—are generally from January through May (USFWS 2007).

Summary

- BRRTP construction will occur outside of the bird breeding season. If this is not possible, a qualified biologist will conduct preconstruction nesting bird surveys.
- If any nests are found in the vicinity of the Project area, all construction within 500 feet will be halted until further instruction is given by the biologist, Environmental Services, or the applicable agency. Eagle nests will be given a 660-foot buffer if construction is visible from the nest or a 330-foot buffer if not.
- All nests, regardless of activity level, will be documented with the attached Avian Nest Reporting Form.
- Active nests of common species, active or inactive eagle nests, or active or inactive nests of listed species are not to be moved without approval from Environmental Services and the appropriate land management agency or the USFWS, as applicable.
- Inactive nests of common species can be removed where they are in the path of construction, with the approval of the appropriate land management agency. Construction may proceed within 500 feet of an inactive nest of a common species, with the approval of the appropriate land management agency.

4.6 AVIAN REPORTING SYSTEM

All avian injuries or mortalities that occur during BRRTP's construction, including those that are observed after-the-fact and are a result of collision or electrocution with the existing transmission lines, are to be immediately reported to the foreman, who will then report the incident to LADWP Environmental Services for reporting to resource agencies as applicable. Following initial notification, the

crew member or foreman is to fill out the avian reporting sheet below. The information entered into this form will be necessary for proper documentation of all incidents and reporting to resource agencies if necessary. If it is discovered during construction that a particular area or particular stretch of transmission line is a "hot spot" for avian safety issues, LADWP will investigate remedial measures to alleviate the issue. Following the completion of construction, LADWP will provide the USFWS with a list of avian mortalities, including dates, locations, and the species involved. If required to do so by the USFWS, LADWP will also create an account and submit information pertaining to all Project-related avian mortalities to the USFWS Bird Fatality/Injury Reporting Program, located online at <https://birdreport.fws.gov/BirdReportHomePage.cfm>.

Summary

- Observed bird injuries or mortalities as a result of the new transmission line or the Project-related existing transmission lines will be reported to Environmental Services and the appropriate land management agency and documented with the attached Avian Incident Reporting Form.
- If repeated incidents occur in a single area or if an incident occurs with a listed species or an eagle, LADWP will investigate the safety of the area and implement remedial measures as necessary, which is most likely to involve installing marker balls or other bird flight diverters, or relocating or reconfiguring the tower(s). Depending on the details of the incidents and the location of the problem area, the USFS may have particular recommendations or requirements for addressing the problem.
- Following the completion of construction, LADWP will provide the USFWS with a list of avian mortalities, including dates, locations, and the species involved.
- If required by the USFWS, LADWP will also create an account and submit information pertaining to all Project-related avian mortalities to the USFWS Bird Fatality/Injury Reporting Program.

LADWP Barren Ridge Renewable Transmission Project Avian Nest Reporting Form

Discoverer's Name _____

Discoverer's Phone Number _____ Date of Nest Discovery _____

Nest Location (circle one) Tower/Pole Tree Shrub Ground

Line Name, Voltage, and Closest Tower/Pole ID _____

Other Specific Location Information _____

Surrounding Habitat (circle all that apply)

Agricultural	Chaparral/Shrubs	Desert Scrub
Disturbed/Developed	Grassland	Riparian

Nest Condition (circle one) Active Inactive, Intact
 Inactive, Partial Deterioration Inactive, Heavy Deterioration

Describe any Bird Signs Around the Nest (feathers, scat, prey remains) _____

Are Birds Present? (circle one) Yes No

Number of Birds Visible _____

Age of Bird(s) (circle all that apply) Adult Juvenile Nestling Eggs Unknown

Bird Species (if known) _____

Type of Bird (circle one if species unknown)

Raptor (hawk, falcon, eagle)	Owl	Crow/Raven
Passerine (small bird)	Unknown	

Risk to Birds/Construction (circle one)

No Risk Potential Risk – Imminent Potential Risk – Not Imminent

Additional Comments _____

LADWP Barren Ridge Renewable Transmission Project Avian Incident Reporting Form

Discoverer's Name _____

Discoverer's Phone Number _____ Date of Nest Discovery _____

Date of Incident/Discovery _____ Time of Incident/Discovery _____

Line Name, Voltage, and Tower/Pole ID _____

GPS Coordinates of Incident (if available) _____

Species (if known) _____

Type of Bird (circle one if species unknown)

Raptor (hawk, falcon, eagle)	Owl	Crow/Raven
Passerine (small bird)	Waterfowl	Unknown

Number of Birds _____

Age of Bird(s) (circle all that apply) Adult Juvenile Nestling Eggs Unknown

Surrounding Habitat (circle all that apply)

Agricultural	Chaparral/Shrubs	Desert Scrub
Disturbed/Developed	Grassland	Riparian

Type of Incident (circle one) Injury Mortality

Description of Incident. Include condition of bird, circumstances of incident and cause of injury or mortality, and any damage or impacts to construction. _____

Please attach a picture of the bird, if possible.

4.7 RISK ASSESSMENT METHODOLOGY

To better understand the potential risks that the original proposed Project presented to birds, POWER Engineers, Inc. (POWER) conducted a preliminary preconstruction avian risk assessment across the entire Project area. This avian risk assessment used wind pattern, topographical, and vegetation data from geographic information system (GIS); data from existing studies, surveys, or databases; and data acquired during reconnaissance-level field assessments of the Project area.

Spring and fall field surveys focusing on existing and additive collision risks were conducted June 9 to 13 and September 22 to 26, 2008, respectively. The purpose of spring surveys was to characterize habitat and build data on avian activity, including species occurrence and nest sites, while the fall surveys were conducted to identify high-risk areas and record species observations. Each mile of the Project was evaluated for a series of pre-determined avian risk factors described in Table 2. These avian risk factors were grouped into two categories: collision factor or “promoters,” and ecological resource enhancements. Collision factors are physical factors that influence the likelihood of collision and include topography, prevailing wind direction and velocity, and transmission line placement, among other considerations. Ecological resource enhancements are features, such as reservoirs or open aqueducts, that typically act to concentrate avian presence by providing additional resources. Analysis was predicated on the assumption that increasing numbers of factors over a given unit of analysis—in this case, over each mile of the Project—would vary directly with mortality risk to avian species (i.e., more factors = more risk).

TABLE 2. AVIAN RISK FACTORS USED IN THE BRRTP PRELIMINARY AVIAN RISK ASSESSMENT

Risk Analysis Factor	Category	Risk Analysis Question	Significance
New corridor (not in conjunction with existing lines)	Collision/mortality affector	Does the new line parallel any existing lines?	New corridors pose a risk because birds are not expecting to have to adjust their flights to avoid the new impediment(s). If lines are constructed adjacent to one another, birds only have to adjust flight once, which reduces the chance of a collision.
Wetland crossing	Collision/mortality affector	Does the new line cross a polygon or line from the National Wetland Inventory (NWI)?	Wetlands are important ecological resources to birds, and if a transmission line is cutting through a wetland, it increases the risk to birds taking off or landing, especially at night when there is less visibility.
Adjacent wetland or marsh	Ecological resource enhancement	Is the new line within 0.5 mile of NWI data?	Wetlands are important ecological resources to birds, and if a transmission line is too close, it increases the risk to birds taking off or landing at angles incompatible with the line's distance and height. This study uses a distance of 0.5 mile in order to have the most agreement among the various factors within the analysis.
Ridge crossing	Collision/mortality affector	Does the new line cross a ridge at a perpendicular angle?	Raptors use thermal updrafts near ridgelines in order to achieve an appropriate soaring height. Transmission lines running perpendicular to ridgelines may pose risks to birds using winds for their migratory paths, or birds flying at an angle perpendicular to the lines.
Open water crossing	Collision/mortality affector	Does the new line cross a lake or reservoir?	Open water is an important ecological resource to birds, and if a transmission line crosses a lake or reservoir, it increases the risk to birds taking off or landing, especially at night when there is less visibility.

Risk Analysis Factor	Category	Risk Analysis Question	Significance
Adjacent water body	Ecological resource enhancement	Is the new line within 0.5 mile of a water body?	Water is an important ecological resource to birds, and if a transmission line is too close, it increases the risk to birds taking off or landing at angles incompatible with the line's distance and height. This study uses a distance of 0.5 mile in order to have the most agreement among the various factors within the analysis.
Stable water body	Ecological resource enhancement	Is the new line within 0.5 mile of a water body with a stable water level and established shoreline or emergent vegetation?	Water bodies with an established shoreline containing emergent vegetation are especially important ecological resources for birds. The risk of avian collision with transmission lines is inversely related to the distance of a water body and the transmission lines in question. This study uses a distance of 0.5 mile in order to have the most agreement among the various factors within the analysis.
Valley or canyon crossing	Collision/mortality affector	Does the new line cross perpendicular to a wide valley or canyon floor?	Valleys and canyons are often used by migrating birds, and if a transmission line crosses perpendicular to the direction of movement, it poses a collision risk to any birds that are passing through, especially at night when there is less visibility.
Wind direction	Collision/mortality affector	Is the new line perpendicular to prevailing winds?	Strong winds may push birds out of their flight paths, and if a transmission line is perpendicular to prevailing winds, it increases the risk that a bird will be pushed into the wires.
Wind speed	Ecological resource enhancement	Are wind speeds greater than 16.8 miles per hour at 50 meters above the ground?	Pope et al. (2006) found that at wind speeds of 15.5 mph, the lowest number of daily migrants was observed. Data for this study was binned, and 16.8 mph was seen as reasonably close to that number. Wind data obtained for GIS analysis was provided at 50 meters above the ground and was obtained from California Energy Commission (CEC) on-line sources and Fisk (2007) wind report.
Habitat separation	Collision/mortality affector	Is the new line within 0.5 mile of water/NWI data or agriculture, and are these separated by the line? Does the new line separate any other foraging, roosting, loafing, or breeding habitat?	Water bodies and agricultural lands are both habitats necessary for life stages. If a transmission line is constructed between different habitats such as these, it poses a risk to birds that may be flying between the two, especially if there is only a short distance. This study uses a distance of 0.5 mile in order to have the most agreement among the various factors within the analysis.
Converging or diverging lines	Collision/mortality affector	Is the new line within 0.5 mile of converging or diverging existing lines?	Converging or diverging transmission lines may cause birds to perform multiple evasive maneuvers, increasing the chance of a collision. This study uses a distance of 0.5 mile in order to have the most agreement among the various factors within the analysis.

Risk Analysis Factor	Category	Risk Analysis Question	Significance
Adjacent to ridgeline	Ecological resource enhancement	Is the new line in proximity to a ridgeline?	Raptors use thermal updrafts near ridgelines in order to achieve an appropriate soaring height. Transmission lines running near or on ridgelines may pose risks to birds using winds for their migratory paths.
Adjacent to river corridor or valley	Ecological resource enhancement	Is the new line in proximity to a valley or canyon floor?	Valleys and canyons are often used by migrating birds, and if a transmission line is near or on a valley or canyon floor, it may pose a risk to birds flying through.
Adjacent to cliffs	Ecological resource enhancement	Is the new line within 0.5 mile of terrain with a slope greater than 40%?	Certain birds, such as California condors and peregrine falcons, may use sloped areas or cliff faces for nesting. If a transmission line is too close, it may pose a risk to adults or young coming to or going from the nest. This study uses a distance of 0.5 mile in order to have the most agreement among the various factors within the analysis.

The risk analysis was based on a binary, “yes or no” approach to the above factors. If a risk analysis factor was present within a mile-long segment, then a “risk point” was awarded, else the mile received nothing. A maximum score of 15 was possible, although no analysis unit received a score greater than nine. Total scores were binned into Low Risk (Score 0 to 3), Medium Risk (Score 4 to 6), and High Risk (Score 7 to 9) categories. Based on the results acquired from this risk analysis, areas of elevated risk were determined throughout the Project area (Appendix M of the Biological Resources Technical Report). Areas that indicated higher avian risk within the Proposed Action included almost the entire new 230 kV circuit component, several areas within San Francisquito Canyon, and areas immediately north of ANF boundaries (Appendix A). Very few areas north of the ANF were determined by this risk model to be of elevated avian risk.

Following the selection of a federal agency-preferred route (Alternative 2, analyzed in this APP) for BRRTP in August 2010, bird use count (BUC) surveys were conducted by POWER biologists within the proposed Project area in October 2010 and March and April 2011. The purpose of these surveys was to record diurnal bird use data within areas that were initially determined, during the preliminary avian risk assessment, to be of elevated risk to birds according to the risk model described above. Areas that were determined to be of low risk to birds were not resurveyed during the BUC surveys, with the exception of one area. The Antelope Valley is designated by the National Audubon Society to be an Important Bird Area (IBA) which, at differing points throughout the year, supports various birds including Le Conte’s thrasher (*Toxostoma lecontei*), vesper sparrow (*Pooecetes gramineus*), horned lark (*Eremophila alpestris*), mountain bluebird (*Sialia currucoides*), mountain plover (*Charadrius montanus*), northern harrier (*Circus cyaneus*), Swainson’s hawk, white-faced ibis (*Plegadis chihi*), and long-billed curlew (*Numenius arquata*), along with vireos, thrushes, warblers, and other birds (National Audubon Society 2010). This IBA encompasses approximately 18.5 linear miles of the Project right-of-way and, although the avian risk assessment model found it to be a low risk area for birds, it was also surveyed during the BUC surveys due to its recognized importance to avian species. Surveys recorded data for diurnal bird use counts, small bird counts, and migration counts. While raptor nest searches were not the purpose of the surveys and were not specifically conducted, the surveys allowed for raptor nesting searches around particular sites or along access roads as surveys observed avian activity.

Use of this information facilitated the identification of areas within the Project that may be high risk areas that would be more likely to be prone to electrocution or collision. These high risk areas and other areas that may be known to be problem areas for avian safety should be considered priority for any retrofitting of existing lines. All new transmission towers will be engineered to the standards discussed above in

Section 4.4, Construction Design Standards, and will be expected to already meet avian safety standards upon energization.

Summary

- LADWP will use the BRRTP Avian Risk Assessment, BRRTP bird use count survey information, and any existing information on bird occurrences, injuries, or mortalities in the Project area to establish priorities for retrofitting existing lines. All new transmission towers will be engineered to the standards discussed above in Section 4.4, Construction Design Standards, and will be expected to be avian safe upon energization.

4.8 MORTALITY REDUCTION MEASURES

LADWP is committed to ensuring the safety of avian species that may be present in the vicinity of BRRTP. Avian safety during the construction phase of BRRTP can be acquired through the implementation of various mortality reduction measures. These can be categorized into preventative, reactive, and proactive measures.

4.8.1. Preventative Mortality Reduction Measures

Preventing future avian safety issues is the biggest step toward ensuring avian safety during the construction of BRRTP. New transmission towers and tubular steel or wood poles, as applicable, would be designed and sited to prevent raptor perching, raptor nesting, and general avian collisions and electrocutions. A more detailed discussion of Project element designs is in Section 4.4, Construction Design Standards.

Additionally, any avian safety measures that are required by Project permits or applicable laws or regulations will be strictly enforced during construction. Construction avoidance and minimization measures that are pertinent to avian safety will be implemented by construction personnel. These may include, but are not limited to, reducing habitat loss or degradation to avoid direct or indirect injuries or mortalities to birds; restoring non-essential construction areas to their preconstruction conditions; scheduling construction and vegetation removal outside of the known breeding season; having a qualified biologist conduct preconstruction nesting bird surveys if construction is during the breeding season; utilizing required nest safety buffers as necessary if construction is during the breeding season; minimizing disturbance to known breeding sites during or outside of the breeding season; implementing fire safety measures on construction sites; avoiding leaving trash on-site, which may attract predators or be mistaken for food by adult nesting birds; minimizing or avoiding pollution due to Project activities to the extent possible; and controlling the spread of non-native and invasive plant seeds during construction.

4.8.2. Reactive Mortality Reduction Measures

By reacting to avian safety issues during construction, LADWP can help prevent additional incidents. One method of doing this is by documenting nests and avian mortalities. More detailed discussions on how LADWP will document and manage nests and avian mortalities can be found in Sections 4.5, Nest Management, and 4.6, Avian Reporting System, respectively. LADWP will assess each case of reported nesting or avian mortality and apply corrective measures where problem areas are found. Agencies will be notified of any incidents as applicable per Project permits.

4.8.3. Proactive Mortality Reduction Measures

Being prepared for the possibility of future avian safety issues can help LADWP prevent or minimize those issues. Adequately training its construction crews, management, and contractors to be knowledgeable and aware of avian safety during BRRTP's construction is one way of ensuring that avian safety measures are implemented correctly. A more detailed discussion of LADWP's proposed avian safety training program can be found in Section 4.2, Training. Evaluating the risk potential of its existing

transmission lines and retrofitting them during construction to be avian safe where necessary is also a method that LADWP can use to proactively reduce avian injuries and mortalities. Working with avian power line interaction groups or researchers can also be a way to help reduce the potential for avian mortality on BRRTP, or even further the state of current knowledge on the subject.

4.8.4. Collaborative Mortality Reduction Measures

LADWP will collaborate with the USFWS and other applicable agencies when special-status species are identified in avian safety incidents. Because the towers are already in place, it is expected that during the construction phase it will be easier to detect incidents on the towers that are being reconductored or having new circuits placed on them. Problem areas will be remediated as necessary to remove the threat of future incidents.

Summary

- LADWP will design its new towers and temporary poles to prevent perching, nesting, collisions, or electrocutions.
- LADWP construction personnel will implement avian-related mitigation measures to further protect avian species.
- LADWP will document avian incidents and nests, remedy any identified problem areas, and notify applicable agency(s) as required.
- LADWP will ensure that all Project-related personnel are trained in avian safety before they start construction.
- LADWP will retrofit any known or identified problem areas within its existing Project-related transmission lines.
- LADWP will participate with avian power line interaction groups or researchers to help further the knowledge of effective avian safety on power lines and will implement any new advancements.
- LADWP will collaborate with applicable agencies when special-status avian species are involved in incidents and will apply remedial measures as required.

4.9 AVIAN ENHANCEMENT OPTIONS

One method of enhancing avian environments around transmission lines is to construct artificial nesting facilities. Transmission towers generally have enough separation between conductors that birds are able to nest in them without affecting the line's operation, although this is not always the case and hardware can be detrimentally affected if a nest is too close to energized areas (APLIC 2006). Temporary transmission poles may be constructed within a particular section of BRRTP around the unincorporated community of Green Valley. Poles are generally at much greater risk of equipment contamination or failure as a result of nesting activities because there is only one central structure that all hardware is connected to. If a utility seeks to avoid potential risk to its electrical equipment and reduce the risk of avian electrocutions, it is desirable, but not necessary, to construct nesting platforms on poles.

If construction occurs during the nesting season and it is likely that there are risks of birds nesting on the temporary poles, LADWP will install nesting platforms in suitable areas. Because the poles will be temporary, it is preferred to avoid any nesting on these poles in the event that one or more nests are built before the poles can be removed, should any construction occur during the nesting season. LADWP will investigate the feasibility and utility of constructing nesting platforms on separate, nearby, non-energized poles that are constructed specifically as nesting alternatives. This will reduce the likelihood of delaying construction due to a bird nest(s) on the temporary energized poles. For maximum appeal to any birds, the non-energized poles will be placed close to the energized poles and will be at least as tall as the energized poles to increase visibility of the surrounding area. Placing sticks and other nesting materials on the platforms will help to attract birds to the sites to begin their own nests; placing an optional perch on the

platform may also help attract birds. However, nesting platforms must not be placed in areas where there may be sensitive wildlife species that could be preyed upon by nesting raptors. Nesting tubes made of UV-resistant PVC can be attached to the sides of structures to avoid having exposed nests near conductors. Besides a standard entrance hole, the tubes should have a hole in the bottom to drain and vents on the sides, and can be positioned either horizontally or vertically on structures. Nesting platforms (for birds such as raptors and owls), nest boxes (for birds such as bluebirds and wrens), and nesting tubes (for birds such as kestrels) can be made by LADWP, bought from specialty stores or nature centers, or be made with assistance from volunteers.

Because habitat suitable for avian species will be degraded or removed during the construction of the BR RTP, LADWP will restore or apply mitigation in these areas and implement noxious weed control measures to reduce the amount of degradation to avian-suitable habitat both within and adjacent to the Project area. These will be implemented to be consistent with the Project mitigation measures.

Another method of enhancing avian habitat is to enhance riparian areas. There are numerous areas, particularly in San Francisco Canyon, where non-native vegetation—particularly giant reed (*Arundo donax*)—is a serious threat to riparian habitat. Restoring these areas or sponsoring their restoration is one way in which LADWP can enhance habitat for avian species during construction of BR RTP. Applicable agencies such as the U.S. Department of Agriculture, Forest Service, CDFG, or USFWS may be consulted for guidance in this matter.

Summary

- If construction occurs during the nesting season, LADWP will construct nesting platforms or other nesting aids on separate, non-energized poles to avoid construction delays from nests in the temporary energized poles.
- LADWP will restore or apply mitigation in all areas that are disturbed during construction.
- LADWP will restore or sponsor the restoration of riparian areas to enhance habitat for riparian birds.

4.10 QUALITY CONTROL

LADWP will implement quality control measures to ensure that this APP is accurate, up-to-date, and used effectively during construction. These measures will include the following:

- LADWP line crews, field engineers, operators, foremen, and design personnel, as well as all construction contractors associated with the BR RTP, are tasked with understanding and complying with this plan.
- Quality control will be overseen by a senior staff member(s) of LADWP's Environmental Services group who will provide quarterly reports to LADWP's General Management.
- The designated staff member(s) will review submitted nest reporting forms and avian incident reporting forms and ensure that they are properly and adequately completed. Any missing information will be obtained from the worker who completed the form. The staff member(s) will ensure that a local (LADWP) incident database is kept up-to-date and, if requested by USFWS, that incidents are consistently reported to the USFWS Bird Fatality/Injury Reporting Program. Any problems with the reporting system will be reported to management for review and remedial action will be taken.
- Any transmission towers or sections of conductor that are fitted with avian safety measures during construction will be monitored for effectiveness—by checking for injured birds, carcasses, or signs of potentially risky nest-building—daily while construction is in the vicinity of the problem area. This task will be delegated by the construction foreman; results will be reported to the foreman, who will in turn report to Environmental Services. Any observed incidents of

nesting, injury, or mortality will be investigated for further remedial actions, which will then be determined and implemented.

- LADWP will review the implementation and success of the APP with USFWS and CDFG every six months during construction of the BRRTP and adjust the parameters and methods accordingly.

4.11 PUBLIC AWARENESS

Public relations are an integral part of everyday business with utility companies, and in times of increasing environmental awareness, public support for a company's environmental program is a great way to boost a company's image. Public awareness of a successfully implemented Avian Protection Plan for the construction of the Barren Ridge Renewable Transmission Project can help create positive publicity and relationships between LADWP and resource agencies, non-profit organizations, researchers and scientists, or Native American Tribes. This can, in turn, further boost public approval of LADWP, its environmental program, and possibly of its future projects should they implement the same level of environmental protection as BRRTP and that demonstrated by this APP.

There are numerous ways that LADWP can reach out to the general public to raise awareness of its avian safety measures during the construction of BRRTP. One of the easiest methods of raising public awareness is to maintain a section on the BRRTP website (<http://www.ladwp.com/barrenridge>) devoted to documenting visual (photographic) progress of the Project's construction, and which contains both a copy of this APP and information on its effective implementation. Photographs or videos showing avian-safe transmission structures would be a key element of the website. Periodic newsletter updates through email or printed material would update interested parties on the progress and successful implementation of this APP during BRRTP's construction, as well as with information regarding imminent construction in an area of elevated avian risk and what measures will be taken to protect birds while work is being conducted. Involving the public in volunteer efforts to help implement this APP, such as during avian enhancement implementation, is also a very effective way for LADWP to increase public awareness of its avian protection policy as stated in Section 4.1, LADWP Avian Protection Policy.

Summary

- LADWP will work to raise public awareness of its avian safety efforts to increase public support by having a dedicated website for BRRTP construction-related avian safety efforts, newsletters, public involvement activities, or other methods.

4.12 KEY RESOURCES

The following entities may be contacted for further information or expertise regarding the information within this APP or the methods and strategies suggested by it:

Federal Agencies

U.S. Fish and Wildlife Service Migratory Bird Permit Office
911 N.E. 11th Avenue
Portland, OR 97232-4181
Tel. (503) 872-2715 Fax (503) 231-2019
Email: permitsR1MB@fws.gov

U.S. Fish and Wildlife Service Pacific Southwest Region Office
2800 Cottage Way, Suite w-2606
Sacramento, CA 95825
Tel. (916) 414-6600

BLM Ridgecrest Field Office
300 South Richmond
Ridgecrest, CA 93555
Tel. (760) 384-5400

Fax (760) 384-5499

USDA Forest Service Angeles National Forest Supervisor's Office
701 N. Santa Anita Ave.
Arcadia, CA 91006
Tel. (626) 574-1613

Fax (626) 574-5207

State Agencies

California Department of Fish and Game South Coast Region Main Office
4949 Viewridge Avenue
San Diego, CA 92123
Tel. (858) 467-4201

Fax (858) 467-4299

California Department of Fish and Game Central Region Main Office
1234 E. Shaw Avenue
Fresno, CA 93710
Tel. (559) 243-4005 ext. 151

Fax (559) 243-4022

Wildlife Rehabilitation Centers

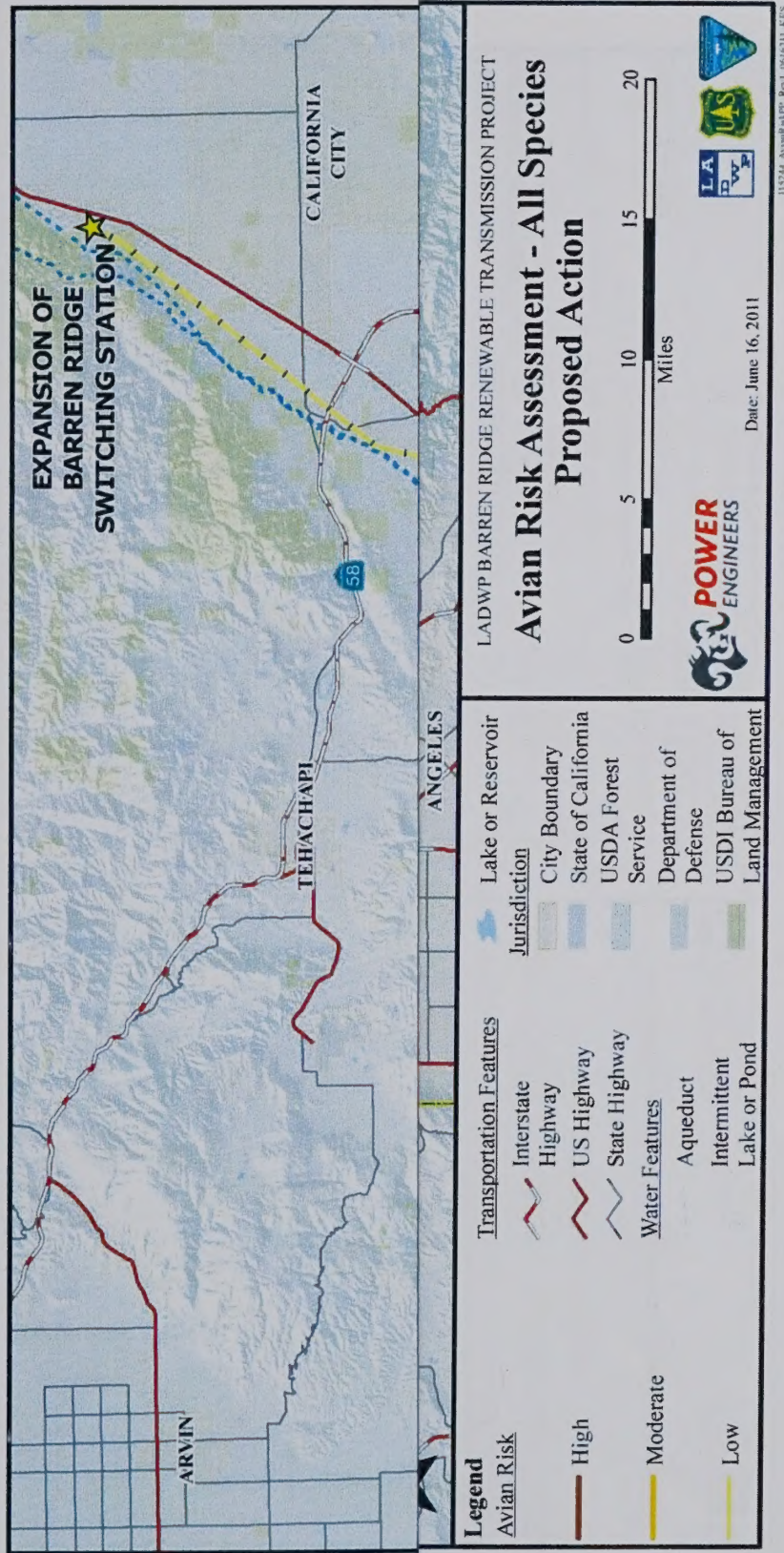
Wildlife Waystation
14831 Little Tujunga Canyon Road
Angeles National Forest, CA 91342
Tel. (818) 899-5201

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APPENDIX A – AVIAN RISK ASSESSMENT MAPS FOR THE PROPOSED ACTION



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